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Report of the Commissioner of the **Environment** and Sustainable Development to the House of Commons

The Commissioner's Perspective—2006 Climate Change—An Overview **Main Points** 







Report of the

Commissioner of the

Environment and
Sustainable Development
to the House of Commons

The Commissioner's Perspective—2006 Climate Change—An Overview Main Points—Chapters 1 to 5



Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.



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### Commissioner of the Environment and Sustainable Development of Canada Commissaire à l'environnement et au développement durable du Canada

Office of the Auditor General of Canada • Bureau du vérificateur général du Canada

To the Honourable Speaker of the House of Commons:

On behalf of the Auditor General of Canada, I have the honour to transmit herewith my Report to the House of Commons for 2006, which is to be laid before the House in accordance with the provisions of section 23(3) of the *Auditor General Act*.

Johanne Gelinas

Johanne Gélinas Commissioner of the Environment and Sustainable Development

#### To the reader:

I welcome your comments and suggestions on this Report and other issues related to the environment and sustainable development. I can be reached at the following address:

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### The Commissioner's Perspective

### Introduction—Climate Change is Upon Us

### All Canadians have a stake

The Earth is warming, triggering dramatic changes in climate and weather systems around the world. Climate scientists overwhelmingly agree that carbon dioxide and other "greenhouse gases" released by human activities are generally to blame. Climate change is a global problem with global consequences: The implications are profound. Experts say we need to act quickly and effectively. I believe this is the prudent thing to do.

Canada both suffers from the consequences and is a source of the problem. The impacts are already being felt from coast to coast to coast and in almost every region and in many sectors of the economy. Hundreds of communities depend on natural resource sectors that are sensitive to climate change, such as agriculture, fisheries, and forestry. The impacts are expected to worsen and could include

- the spread of pests and diseases,
- drought in the prairies,
- melting permafrost and destabilized infrastructure in the North,
- rising sea levels and more intense storms on the coasts, and
- more days of extreme heat and smog in large urban centres.

The effects may be worse in other countries, especially in nations with the least capacity to cope. Canada and the world will feel the repercussions of climate change for generations to come.

Relatively speaking, Canada is a major source of greenhouse gas emissions that contribute to climate change. Per capita, Canadians are among the highest emitters in the world. Since producing and consuming energy from fossil fuels accounts for 80 percent of man-made greenhouse gas emissions, experts suggest long-term solutions involve changing to low-carbon economy and energy systems.

As we are an energy-producing and dependent country, climate change goes to the heart of our economy and touches many aspects of our lives, threatening economic costs. It also presents opportunities. For example, developing and deploying new technology will play a key role in building a healthier and more sustainable future. Canadians will



Johanne Gélinas Commissioner of the Environment and Sustainable Development

### Did you know?

Carbon dioxide can remain in the atmosphere for up to 200 years, which means that stabilizing carbon dioxide emissions at current levels will not immediately stabilize atmospheric concentrations. have the opportunity to contribute and compete at home and globally. No matter how you look at the situation, the stakes are high for Canada. However, the impact, costs, and benefits of climate change will not be felt or shared equally by all Canadians—there will be economic, social, and environmental winners and losers.

### Our findings are crucial to all Canadians

Canadians are aware of and are worried about climate change. The federal government plays a crucial role in addressing climate change on the home and international fronts. Its efforts span numerous federal departments and agencies and cover dozens of programs designed to understand, mitigate, and adapt to climate change. Its actions matter, and its successes and failures have consequences. For these reasons, I decided 18 months ago to devote my 2006 report to auditing and monitoring aspects of the government's approach to climate change (Exhibit 1).

This is not the first time we have audited the topic (Exhibit 2). The response to weaknesses we identified in the past has been disappointing. On the basis of this year's work, I am more troubled than ever by the federal government's long-standing failure to confront one of the greatest challenges of our time. Our future is at stake.

This year's audits started with one government in power and ended in June before the current government had decided the approach it would take to address climate change. This does not affect our findings. Our work is non-partisan and fact-based, and deals with how the government implements its policy choices. Climate change is here to stay, and ours is a message to past, current, and future governments of Canada.

In the following pages, I provide a snapshot of our key audit findings by answering three seemingly simple questions:

- Is Canada on track to meet its emission reduction obligations?
- Is Canada ready to adapt to the impact of climate change?
- Is the government organized and managing well?

Then I reflect on what the government needs to do in areas of energy development, planning, science, and adaptation; governance; and, most importantly, leadership. This year, I have included Climate Change—An Overview with my Perspective (see page 23). The Overview describes climate change, what can be done about it, and Canada's international and domestic commitments.

#### Exhibit 1 An overview of this year's report

#### Chapter 1

- · Governance and accountability regarding a management framework for climate change initiatives
- . Monitoring of systems that track spending on climate change initiatives and reporting on spending
- · Targets and policy tools for transportation and large industrial emitters
- Two new mechanisms for reducing greenhouse gas emissions:
  - · a domestic system to trade in greenhouse gas emissions, and
  - Sustainable Development Technology Canada's climate change activities

#### Chapter 2

- An assessment of federal progress toward a strategy to help Canadians adapt to a changing climate (assessment of vulnerabilities to potential impacts of a changing climate, identification of priorities, and development of action plans)
- Work on climate change adaptation in six departments (with responsibilities for sectors or regions likely to be affected by climate change)
- Development and provision of information in three areas: research on impacts and adaptation, climate monitoring (to assess impacts and support adaptation), and regional climate modelling

### Chapter 3

- A look in detail at three NRCan programs that each received \$100 million or more in federal funding earmarked for climate change programs:
  - · the Wind Power Production Incentive,
  - · the EnerGuide for Existing Houses, and
  - · the Ethanol Expansion Program
- An examination of the amount of greenhouse gas emission reductions the three programs have achieved, what they have cost, and how the Department monitors and reports on program results and spending
- An assessment of the extent to which NRCan has learned from the experience, and the extent to which it has taken steps to reduce risks in managing its programs
- A broad look at other emission reduction efforts in the oil and gas sector and the areas of wind power and home energy efficiency to see whether NRCan can demonstrate what its programs and other activities have contributed to emission reductions targeted in the government's plans for addressing climate change

#### Chapter 4

• A report on the progress departments have made in meeting their sustainable development strategy commitments—specifically, the progress of 21 departments and agencies in implementing 39 commitments from their sustainable development strategies, including those addressing climate change

### Chapter 5

- The annual report to Parliament on the environmental petitions process as required by the *Auditor General Act*, and new petitions received between 1 July 2005 and 30 June 2006
- An audit of the federal government's response to a petition concerning the purchase of green power—power derived from low-impact renewable sources of energy, such as wind; and an assessment of actions taken by Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada on the Purchase of Electricity from Renewable Resources Program, which aims to purchase green power and help develop markets for green power

### Exhibit 2 Findings from past audits

- In 1998, we audited Canada's climate change implementation strategy and cited
  poor planning and ineffective management as the root cause behind Canada's
  failure at that time to meet its commitments. We recommended that the federal
  government take the lead, in collaboration with other levels of government and
  major stakeholders, in a determined national effort.
- In our follow-up audit in Chapter 6 of the Commissioner's 2001 Report, we noted progress in developing a management structure for climate change, but none in providing comprehensive information to Parliament. We noted that the federal government needed to continue to clarify federal roles and responsibilities, develop a broader portfolio of measures to meet Canada's climate change commitments, and provide more detailed information to Parliament.

### Looking Back-Too Little, Too Slow

### Canada is not on track to meet its obligations to reduce emissions

Under the Kyoto Protocol, Canada agreed to reduce its emission levels in 2008–12 to 6 percent below those in 1990. The government's own 2004 data revealed that our greenhouse gas emissions were almost 27 percent above 1990 levels and were rising, not declining (Exhibit 3). To many, this is not news. Indeed, it has been widely reported by the government itself. So what is going wrong? Our audits identified several reasons why Canada is not on track to meet the Kyoto targets.

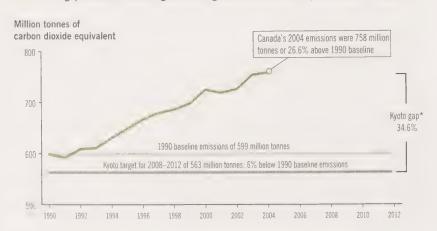


Exhibit 3 The gap between Canada's greenhouse gas emissions and its Kyoto target is growing

Source: Adapted from Environment Canada's National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada (April 2006)

<sup>\*</sup> Mathematical procedures for calculating the gap do not involve adding the percentages. In addition, percentages have been calculated using the original unrounded numbers.

### Did You Know?

The federal government has been in discussion with industry and other stakeholders on the design of the Large Final Emitter System since 2002.

The government has launched several programs that our audits found were reducing greenhouse gas emissions or were poised to reduce emissions in the future. Yet, it has struggled to put in place other key initiatives—most notably, the pivotal Large Final Emitter System and the system for domestic emissions trading. The systems' development has been slow, and many elements critical to their success remain unresolved.

Even if the measures contained in the previous government's 2005 plan had been fully implemented, it is difficult to say whether the projected emission reductions would have been enough to meet our Kyoto obligations. In the fullness of time, some measures may have contributed. Yet, in certain sectors, the measures are not up to the task of meeting the Kyoto obligations. For example, the transportation and industry sectors account for the majority of Canada's emissions—78 percent—but emission reduction measures we examined are not expected to bring emissions below 1990 levels. At best, they might only slow the rate of growth. Given Canada's strong economic growth, especially in energy production, meeting our Kyoto target would arguably have been a challenge even if bolder action had been taken earlier.

Ever-shifting responsibilities between federal departments and ministers, turnover of key personnel, and changes from plan to plan (Exhibit 4) have caused delays and a loss of momentum. The government's weak handling of the many transitions that took place over the history of this file has hampered progress.

Lastly, the federal government does not act alone. It has faced—and still faces—considerable challenges in bringing various players onside and in mobilizing concerted action. Achieving success on a problem as pervasive as climate change demands that all levels of government, industry and business groups, science, academia, and civil society organizations collaborate. The reality to date is that some players have been unwilling to do so. Deep divisions and conflicts remain.

Exhibit 4 Three federal plans for addressing climate change

Action Plan 2000	Climate Change Plan for Canada	Project Green
(October 2000)	(November 2002)	(April 2005)
This plan set out a package of initiatives to take Canada one third of the way to its Kyoto target. It aimed at key sectors and included initiatives in areas such as transportation, energy, and buildings.	This plan's goals were to help Canadians become efficient energy producers and consumers. The 2002 plan promoted Canadian leadership in developing new and cleaner technologies, and identified a broad range of actions based on the earlier 2000 plan.	This plan built on the two previous plans. Its goals were to help mobilize Canadians around Canada's Kyoto commitments, and help transform the economy while maintaining our competitiveness.

### Canada is not adequately prepared to adapt to the effects of climate change

Some effects of climate change are inevitable. Yet, the level of attention paid to adaptation pales in comparison with the attention paid to reducing emissions, despite the fact that, in the 1992 United Nations Framework Convention on Climate Change, the government committed to work on both fronts.

The federal government has no overall adaptation plan, and key elements of an effective approach have still to be put in place. Little work has been done to assess how adaptation will affect federal policies and programs. Work on a national adaptation framework (in partnership with the provinces), a federal adaptation strategy, and a climate change science plan for Canada began in earnest, made some progress, and then stalled.

Science and research are the foundation for understanding changes in climatic systems and their impact, and for understanding where we are vulnerable and what we must do to adapt. While investments by the government have built knowledge, significant information gaps still exist. The government has not effectively mobilized and organized its scientific and research activities to ensure that decision makers get the information they need.

### The federal government's efforts are not well organized and not well managed

Our audits identified weaknesses in the government-wide system of accountability for climate change. Co-ordinating committees and mechanisms that once existed have been phased out and have not been replaced. A lack of central ownership, clearly defined departmental responsibilities, integrated strategies, and ongoing evaluation systems all point to problems in the government's management of the climate change initiative.

Since 1997, the government has announced over \$6 billion in funding for initiatives on climate change. However, it does not yet have an effective government-wide system to track expenditures, performance, and results on its climate change programs. As a result, the government does not have the necessary tools for effective management, nor can it provide Parliamentarians with an accurate government-wide picture on spending and results they have requested.

On the whole, the government's response to climate change is not a good story. At a government-wide level, our audits revealed inadequate leadership, planning, and performance. To date, the approach has lacked foresight and direction and has created confusion

### Did You Know?

The Government of Canada has not released comprehensive report on climate change expenditures or results since 2003. The next comprehensive report is not expected until 2008.

Canada is not the only industrialized country having difficulty addressing climate change.

#### Factors such as

- · economic growth,
- · increased use of transportation,
- the structure of energy production, and
- · changes in population and climate

have all impacted countries' ability to reduce emissions.

#### Did You Know?

A Government of Canada database lists 200 projects on impacts and adaptation research related to climate change.

and uncertainty for those trying to deal with it. Many of the weaknesses identified in our audits are of the government's own making. It has not been effective in leading and deciding on many of the key areas under its control. Change is needed.

### The government has a foundation to build on

I do want to emphasize that a foundation is in place and that it is important to build on it. As noted earlier, our audits identified several positive programs and practices that have either already reduced emissions or hold promise to do so.

Pockets of federal research and support to research networks have helped to gather knowledge on Canada's vulnerability to climate change in areas such as health, coastal zones, fisheries, forests, water resources, and agriculture. Important partnerships have been established. Departments and central agencies are taking steps to organize all federal programs on climate change in a logical way and are developing government-wide tracking and reporting systems. As a result, some foundational learning has taken place and expertise has been built.

There are motivated and talented people in the federal public service. During our audits, we met countless knowledgeable and creative public servants—scientists, program managers, and policy-makers alike—who are committed to success.

### Looking Forward—a Massive Scale Up of Efforts is Needed

Canada is at a historic juncture in its climate change file. The current government says it wants to significantly improve the poor track record to date. To do so, it must take immediate and long-lasting action on many fronts. The direction it sets and actions it takes will affect many generations of Canadians. Even though difficult choices and decisions lie ahead, I am optimistic that the government can meet the challenge. In the following pages, I identify five areas that I believe are crucial and where the office will focus its future audit efforts:

- · leadership,
- energy and climate change,
- reducing greenhouse gas emissions,
- adaptation, and
- governance and accountability.

Each area is important but the call for leadership applies to them all.

### Provide sustained leadership

Successfully confronting the economic, social, and environmental risks and the opportunities posed by climate change requires unprecedented leadership from the highest levels of government, Parliament, and the public service. Transformational change cannot be driven solely from the bottom up. Rather, it requires bold, decisive top-down leadership. Once direction is set, sustained efforts are needed to ensure that it is fully implemented.

Although the federal government has ultimate responsibility for making and meeting international commitments on climate change (such as those included in the Kyoto Protocol), it does not and cannot act alone. It must lead to establish and, in some cases, rebuild strong and long-lasting partnerships with other levels of government, industry, communities, non-government organizations, academia, and others.

### Integrate energy and climate change

The government cannot effectively address climate change without considering changes in the way Canadians produce, distribute, and consume energy. And we cannot secure our energy future without considering climate change—these issues are unavoidably linked. Any new approach must confront this reality.

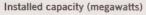
First and foremost, the government needs to clearly state how it intends to reconcile the need to reduce greenhouse gas emissions against expected growth in the oil and gas sector. And Canada's oil and gas industry is booming. Greenhouse gas emissions in the oil and gas sector have increased over 50 percent since 1990. Emissions from expanded Western oil sands operations could double between 2004 and 2015. This increase in production could counter efforts to reduce emissions in other areas of society unless options such as new technology are developed and put into widespread use.

The federal government also needs to define how and to what extent it will support energy conservation and efficiency; and alternative sources of energy, including wind, solar, biomass, and others. The government is already supporting the diversification of energy in selected sectors. We found, for example, that the federally funded Wind Power Production Incentive stimulated investment in wind energy (Exhibit 5). Yet this program is operating in the absence of overall direction for the wind sector. Indeed, government support to various alternative sources of energy is occurring in the absence of an overall direction for energy development in Canada.

#### Did You Know?

- In 2004, Canada exported two and a half times more oil and gas than it did in 1990
- Oil and gas represent over 90 percent of Canada's energy exports
  - Canada has been the largest foreign supplie of crude oil to the United States for seven consecutive years, from 1999 to 2005
- Since 1990, over 28 percent of the increase in Canada's total greenhouse gas emissions is attributable to exports of oil and gas

Exhibit 5 Total installed wind power capacity in Canada is growing





Source: Based on information provided by the Canadian Wind Energy Association

### Develop a plan to reduce greenhouse gas emissions

The government urgently needs a believable, clear, and realistic plan to significantly reduce greenhouse gas emissions. It must establish and commit to short- and long-term national goals: a short-term focus to maintain priority, urgency, and momentum and a long-term one to provide the certainty that supports capital investments that will last for decades. The current government has announced that Canada cannot realistically meet its Kyoto target. If so, then new targets should take its place. In this vein, the government must make a concerted effort to slow the rate of growth of greenhouse gas emissions, ensure that emissions reach their peak as soon as possible, and then achieve substantial reductions in absolute levels of emissions.

There are no magic formulas or quick fixes, however. To achieve success, the government must use a mix of tools and measures, including regulations, financial incentives, market-based emission trading mechanisms (linked to global ones), technology development and deployment, investments in infrastructure, public education, and others. The measures it takes should

- rest on solid economic, environmental, and social analyses;
- tackle major sources of greenhouse gas emissions in every sector and focus efforts on the highest priorities;
- · have clear, numerical targets to reduce emissions; and
- ensure that the different programs capitalize on departmental strengths and areas of expertise and complement one another to form a cohesive whole.

The climate change plan needs to fit into a broader federal plan for the environment and sustainable development (Exhibit 6).

### Exhibit 6 Action on climate change should be linked to a broader environment and sustainable development plan

The federal government has many environment and sustainable development responsibilities and initiatives, among which climate change is particularly important. But, as I have reported in past years, the government has no overall plan to explain to parliamentarians and Canadians its environment and sustainable development goals and how they will be reached. My reports, and those of two parliamentary committees, have called on the government to develop such an overall sustainable development strategy. A commitment to act on the recommendations was made by the Privy Council Office, but not carried out.

Such a strategy would be a means to do the following:

- Educate Canadians on the environment and sustainable development challenges and opportunities facing Canada in the coming decades
- Provide a clear, compelling vision of the sustainable Canada that the federal government seeks
- · Set out the government's key priorities
- Better explain individual initiatives by linking these to the vision and priorities
- Identify the targets and indicators by which the government will demonstrate results
- Help ensure coherence among the individual departmental sustainable development strategies

### Push ahead with adaptation

Adaptation is fundamentally about protecting the economic and social well-being of Canadians, by helping to improve their ability to cope with a changing climate. There is a compelling case for government action and yet, it has been neglected in efforts to date. Instead of being an afterthought, it should be a prominent part of government plans. Failing to adequately invest in this area will undermine Canada's ability to make wise decisions.

While there are knowledge gaps, they are not the real obstacle; enough has been learned for adaptation to proceed. The government must better prepare for the impacts of climate change on federal programs, the economy, and society. It should

- examine how climate change will affect individual federal programs and departments and make the required modifications,
- develop an action plan that cuts across all departments,
- work with other levels of government to develop clear priorities, and
- find new ways to connect researchers with decision makers.

### Assure governance and accountability

Planning, management, and performance go hand in hand. A good plan is important, but so is taking action and assuring results. Effective governance and accountability are fundamental in all policy areas and are especially crucial elements of complex, horizontal, long-term files like climate change. Our audits show that the government's approach to climate change needs to pay much more attention to

- establishing clear roles, responsibilities, and authority for all federal departments and agencies;
- designing and putting in place mechanisms to co-ordinate federal activities across departments and agencies;
- tracking expenditures and performance against agreed-upon targets and reporting this information to Parliament and Canadians; and
- monitoring, on an ongoing basis, the performance of all programs, to learn what works and to retain and improve the programs that provide cost-effective, clear results.

The Treasury Board Secretariat, the Privy Council Office, and the Department of Finance must play a strong role.

### A Final Word—Finding Lasting Solutions

The government's response to climate change will be a critical test of its commitment to sustainable development. Reducing our greenhouse gas emissions and adapting to present and future effects of climate change are challenging tasks. It is a long-term journey, and there may be blind alleys and false starts along the way. Canadians should be able to expect their federal government to stay the course until lasting solutions are found. It is in our own best interest.

The government accepted all of the recommendations we made in the following chapters. The government has indicated that it is working on a new plan to address climate change and thus did not provide detailed responses to all of the recommendations. In the new plan, I expect the government to provide a description of how it has taken our recommendations into account, and to so inform Parliament and the Canadian public.

### Appendix Auditor General Act—Excerpts

An Act respecting the Office of the Auditor General of Canada and sustainable development monitoring and reporting

#### **INTERPRETATION**

**Definitions** 

2. In this Act,

"appropriate Minister" "appropriate Minister" has the meaning assigned by section 2 of the *Financial Administration Act*:

"category I department"

"category I department" means

- (a) any department named in Schedule I to the Financial Administration Act,
- (b) any department in respect of which a direction has been made under subsection 24(3), and
- (c) any department, set out in the schedule;

"Commissioner"

"Commissioner" means the Commissioner of the Environment and Sustainable Development appointed under subsection 15.1(1);

"sustainable development"

"sustainable development" means development that meets the needs of the present without compromising the ability of future generations to meet their own needs;

"sustainable development strategy" "sustainable development strategy", with respect to a category I department, means the department's objectives, and plans of action, to further sustainable development.

### **DUTIES**

Examination

5. The Auditor General is the auditor of the accounts of Canada, including those relating to the Consolidated Revenue Fund and as such shall make such examinations and inquiries as he considers necessary to enable him to report as required by this Act;

Annual and additional reports to the House of Commons

7. (1) The Auditor General shall report annually to the House of Commons and may make, in addition to any special report made under subsection 8(1) or 19(2) and the Commissioner's report under subsection 23(2), not more than three additional reports in any year to the House of Commons

- (a) on the work of his office; and,
- (b) on whether, in carrying on the work of his office, he received all the information and explanations he required.

#### Idem

- (2) Each report of the Auditor General under subsection (1) shall call attention to any thing that he considers to be of significance and of a nature that should be brought to the attention of the House of Commons, including any cases in which he has observed that
  - (a) accounts have not been faithfully and properly maintained or public money has not been fully accounted for or paid, where so required by law, into the Consolidated Revenue Fund;
  - (b) essential records have not been maintained or the rules and procedures applied have been insufficient to safeguard and control public property, to secure an effective check on the assessment, collection and proper allocation of the revenue and to ensure that expenditures have been made only as authorized:
  - (c) money has been expended other than for purposes for which it was appropriated by Parliament;
  - (d) money has been expended without due regard to economy or efficiency;
  - (e) satisfactory procedures have not been established to measure and report the effectiveness of programs, where such procedures could appropriately and reasonably be implemented; or
  - (f) money has been expended without due regard to the environmental effects of those expenditures in the context of sustainable development.

#### STAFF OF THE AUDITOR GENERAL

### Appointment of Commissioner

**15.1** (1) The Auditor General shall, in accordance with the *Public Service Employment Act*, appoint a senior officer to be called the Commissioner of the Environment and Sustainable Development who shall report directly to the Auditor General.

### Commissioner's duties

(2) The Commissioner shall assist the Auditor General in performing the duties of the Auditor General set out in this Act that relate to the environment and sustainable development.

#### SUSTAINABLE DEVELOPMENT

#### Purpose

- 21.1 The purpose of the Commissioner is to provide sustainable development monitoring and reporting on the progress of category I departments towards sustainable development, which is a continually evolving concept based on the integration of social, economic and environmental concerns, and which may be achieved by, among other things,
  - (a) the integration of the environment and the economy;
  - (b) protecting the health of Canadians;
  - (c) protecting ecosystems;
  - (d) meeting international obligations;

- (e) promoting equity;
- (f) an integrated approach to planning and making decisions that takes into account the environmental and natural resource costs of different economic options and the economic costs of different environmental and natural resource options;
- (g) preventing pollution; and
- (h) respect for nature and the needs of future generations.

### Petitions received

22. (1) Where the Auditor General receives a petition in writing from a resident of Canada about an environmental matter in the context of sustainable development that is the responsibility of a category I department, the Auditor General shall make a record of the petition and forward the petition within fifteen days after the day on which it is received to the appropriate Minister for the department.

# Acknowledgement to be sent

(2) Within fifteen days after the day on which the Minister receives the petition from the Auditor General, the Minister shall send to the person who made the petition an acknowledgement of receipt of the petition and shall send a copy of the acknowledgement to the Auditor General.

# Minister to respond

- (3) The Minister shall consider the petition and send to the person who made it a reply that responds to it, and shall send a copy of the reply to the Auditor General, within
- (a) one hundred and twenty days after the day on which the Minister receives the petition from the Auditor General; or
- (b) any longer time, where the Minister personally, within those one hundred and twenty days, notifies the person who made the petition that it is not possible to reply within those one hundred and twenty days and sends a copy of that notification to the Auditor General.

# Multiple petitioners

(4) Where the petition is from more that one person, it is sufficient for the Minister to send the acknowledgement and reply, and the notification, if any, to one or more of the petitioners rather than to all of them.

#### Duty to monitor

- 23. (1) The Commissioner shall make any examinations and inquiries that the Commissioner considers necessary in order to monitor
  - (a) the extent to which category I departments have met the objectives, and implemented the plans, set out in their sustainable development strategies laid before the House of Commons under section 24; and
  - (b) the replies by Ministers required by subsection 22(3).

# Commissioner's report

- (2) The Commissioner shall, on behalf of the Auditor General, report annually to the House of Commons concerning anything that the Commissioner considers should be brought to the attention of that House in relation to environmental and other aspects of sustainable development, including
  - (a) the extent to which category I departments have met the objectives, and implemented the plans, set out in their sustainable development strategies laid before that House under section 24;
  - (b) the number of petitions recorded as required by subsection 22(1), the subject-matter of the petitions and their status; and
  - (c) the exercising of the authority of the Governor in Council under any of subsections 24(3)to (5).

### Submission and tabling of report

(3) The report required by subsection (2) shall be submitted to the Speaker of the House of Commons and shall be laid before that House by the Speaker on any of the next fifteen days on which that House is sitting after the Speaker receives it.

### Strategies to be tabled

- **24.** (1) The appropriate Minister for each category I department shall cause the department to prepare a sustainable development strategy for the department and shall cause the strategy to be laid before the House of Commons
  - (a) within two years after this subsection comes into force; or
  - (b) in the case of a department that becomes a category I department on a day after this subsection comes into force, before the earlier of the second anniversary of that day and a day fixed by the Governor in Council pursuant to subsection (4).

# Updated strategies to be tabled

(2) The appropriate Minister for the category I department shall cause the department's sustainable development strategy to be updated at least every three years and shall cause each updated strategy to be laid before the House of Commons on any of the next fifteen days on which that House is sitting after the strategy is updated.

Governor in Council direction

(3) The Governor in Council may, on the recommendation of the appropriate Minister for a department not named in Schedule I to the *Financial Administration Act*, direct that the requirements of subsections (1) and (2) apply in respect of the department.

Date fixed by Governor in Council (4) On the recommendation of the appropriate Minister for a department that becomes a category I department after this subsection comes into force, the Governor in Council may, for the purpose of subsection (1), fix the day before which the sustainable development strategy of the department shall be laid before the House of Commons.

### Regulations

(5) The Governor in Council may, on the recommendation of the Minister of the Environment, make regulations prescribing the form in which sustainable development strategies are to be prepared and the information required to be contained in them.

### SCHEDULE (Section 2)

Atlantic Canada Opportunities Agency

Agence de promotion économique du Canada atlantique

Canada Revenue Agency

Agence du revenu du Canada

Canadian International Development Agency

Agence canadienne de développement international

Economic Development Agency of Canada for the Regions of Quebec

Agence de développement économique du Canada pour les régions du Québec

Parks Canada Agency

Agence Parcs Canada

Climate Change—An Overview

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# Climate Change—An Overview

### Introduction

1. Since 1990, the Government of Canada has made domestic and international commitments to address climate change. To fulfil these commitments, it has developed many plans and programs and has allocated billions of dollars. This 2006 Report of the Commissioner of the Environment and Sustainable Development deals with selected aspects of the Government's response. Climate change is a complex issue. We felt it was important to offer some background information to provide context for the readers of this report. To avoid repetition in each of the separate chapters, this overview serves as an introduction and a companion to each chapter. It provides some general information about climate change, its projected effects, and international and Canadian responses.

We recognize that there is ongoing debate on many aspects of climate change. This discussion is best left to other forums. The Government of Canada has accepted the need to take action, made binding international commitments, and invested significant resources to address climate change. The complex nature of this issue means that we cannot be comprehensive in our coverage. We leave it to readers to seek additional information as needed and form their own conclusions.

The information in this overview is drawn from publicly available sources provided by the Government of Canada and multilateral organizations such as the United Nations, whose documents have been accepted as a basis to inform policy decisions by governments around the world, including Canada. It does not contain any original research, opinion, or analysis by the Office of the Auditor General of Canada.

2. There are many uncertainties associated with climate change including incomplete knowledge of the global climate system, and future rates of human-generated greenhouse gas emissions and how they will affect climate. There are also scientists who disagree that human activities are responsible for climate change. In its Climate Change 2001: Synthesis Report, the Intergovernmental Panel on Climate Change (IPCC) writes that deciding what to do about climate change means dealing with uncertainty. The impacts of climate change could be more or less serious than scientists project. Governments must balance the risks of either insufficient or excessive action, while considering the economic and environmental consequences, their likelihood, and society's attitude towards risk.

The World Meteorological Organization and the United Nations Environment Program established the Intergovernmental Panel on Climate Change in 1988 to undertake periodic, comprehensive assessments of climate change, its projected effects, and options for mitigating and adapting to the risks it poses.

The precautionary principle

3. In the absence of certainty, governments may apply what is commonly known as the precautionary principle to issues related to the environment and development. Canada and 178 other nations endorsed the precautionary principle at the 1992 United Nations Conference on Environment and Development. The Government of Canada has applied the precautionary principle to climate change, stating that the risks of climate change are real and significant and that such risks "make it prudent that we begin precautionary action now."

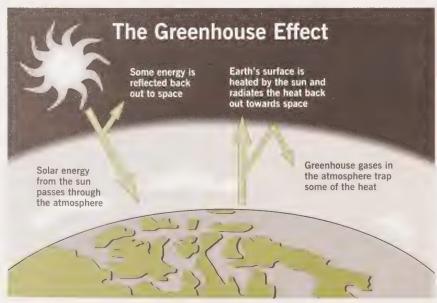
# **Explaining Climate Change**

The greenhouse effect

Did you know?

4. A natural system, known as the "greenhouse effect" because it resembles the role of glass in a greenhouse, regulates the temperature on Earth (Exhibit 1). Greenhouse gases, which make up less than one percent of the atmosphere, absorb and transmit solar energy, thereby warming the Earth's surface. These gases include water vapour, carbon dioxide, methane, nitrous oxide, and ozone. Without naturally occurring greenhouse gases, the temperature on Earth would drop from the current average of plus 14 degrees to minus 18 degrees Celsius—too cold to sustain many forms of life on earth.

Exhibit 1 How the greenhouse effect works



Source: Environment Canada 2006

#### Did you know?

**Weather** is the state of the atmosphere, including temperature, wind, and precipitation, at a given place or time.

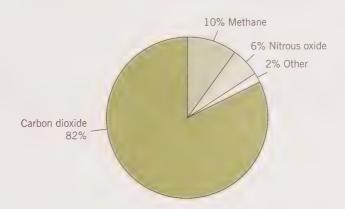
Climate describes the average weather, including temperature, wind, and precipitation patterns that a region experiences over time (usually a thirty-year period). To put it simply, climate is what we can expect, but weather is what we get.

**Global warming** refers to an increase in the average global surface temperature.

**Climate change** refers to a change in average weather.

- 5. The world's climate varies considerably over long periods of time, responding to natural changes in solar radiation, and to the Earth's orbit and volcanic activity. But many scientists generally agree that a new kind of climate change is now under way. Since the Industrial Revolution, certain human activities have released more of the naturally occurring greenhouse gases and added new ones, such as some chemicals from industrial activities. These emissions increase concentrations of greenhouse gases in the atmosphere. Current concerns about climate change revolve around the role of human activities in increasing greenhouse gas concentrations in the atmosphere. Many scientists agree that rising concentrations of greenhouse gases enhance the natural greenhouse effect, raising temperatures, disturbing the balance of natural systems, and damaging ecosystems.
- 6. The main greenhouse gases released by human activities are carbon dioxide, methane, and nitrous oxide (Exhibit 2). Carbon dioxide is the predominant greenhouse gas released by developed countries. According to the United Nations, the production and consumption of fossil fuels accounts for approximately 80 percent of carbon dioxide emissions from human activities. Deforestation, which releases carbon dioxide into the atmosphere when trees are burned or decompose, is the second largest source of carbon dioxide. Methane is released by landfills, waste water treatment, some agricultural practices, and livestock. Sources of nitrous oxide include chemical fertilizers and burning fossil fuels. "Other" greenhouse gases are the three synthetic chemicals measured by the United Nations. These are sulphur hexafluoride, perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs).

Exhibit 2 Carbon dioxide is the predominant greenhouse gas released by developed countries



Source: Greenhouse Gas Emissions Data for 1990–2003, submitted to the United Nations Framework Convention on Climate Change (2005)

#### The science of climate change

# Key conclusions of the Intergovernmental Panel on Climate Change

First Assessment (1990). Human activities are substantially increasing atmospheric concentrations of greenhouse gases, and this will enhance the greenhouse effect and result in an additional warming of the Earth's surface

Second Assessment (1995). The balance of evidence suggests a discernible human influence on global climate.

Third Assessment (2001). There is new and stronger evidence that human activities are responsible for most of the warming over the last 50 years. Emissions from human activities continue to alter the atmosphere in ways that are expected to continue to change the climate Climate change effects will persist for many centuries.

- 7. As part of its mandate to assess climate change and its effects, the Intergovernmental Panel on Climate Change (IPCC) published its third and most recent assessment in 2001. IPCC reports are based on published, peer-reviewed scientific literature and research from scientists around the world. Several thousand experts, including many Canadians, write and review the reports. Their findings have been endorsed by many nations, including Canada, as a sound base upon which to develop both national and international responses.
- 8. Making informed decisions about how, or if, to respond to climate change requires a good understanding of the climate system and its response to increasing greenhouse gas levels. Climate science plays a crucial role in helping to understand the potential scope and implications of climate change through
  - Climate monitoring—observing, recording, and analyzing past and present climate using direct measurement and proxy data (such as tree rings and ice core data);
  - Climate modeling—using computers to simulate the global climate system, by reproducing past and current states, and projecting how climate will behave in the future.
- 9. According to the IPCC 2001 assessment, atmospheric concentrations of carbon dioxide increased by about 31 percent between the years 1750 and 2000. Concentrations of methane and nitrous oxide had increased by approximately 150 percent and 15 percent, respectively. The IPCC notes that present concentrations of carbon dioxide appear to be higher than at any time during the past 420,000 years and that the current rate of increase may have been unprecedented in the past 20,000 years.
- 10. The IPCC has assessed several possible scenarios using a variety of factors that can influence greenhouse gas emissions, such as global population, and economic, technological, and social trends. By 2100, atmospheric concentrations of carbon dioxide are projected to range from 75 to 350 percent above pre-industrial levels. The IPCC asserts that the risks of climate change damage would be reduced by stabilizing concentrations of carbon dioxide in the atmosphere and that stabilizing these concentrations would require substantial reductions in emissions below current levels.

#### Impact of climate change

11. Climate change is more than a warming trend. Increasing temperatures are projected to change many aspects of the weather, including wind patterns, the amount and type of precipitation that a region will experience, and the frequency of severe weather events. The impacts are expected to vary regionally, with land areas warming up more than oceans do, and with greater warming occurring in the Northern Hemisphere. The IPCC concludes that biological, physical, and human systems are already affected by climate change.

#### Observed climate changes

- **12.** According to the IPCC's Climate Change 2001: Synthesis Report, some examples of observed climate change are that
  - the average global temperature increased by about 0.6 degrees Celsius during the 20th century;
  - the average global sea level increased 10 to 20 centimetres in the 20th century;
  - growing seasons in the Northern Hemisphere are longer now, and many plants, insects, and animals have shifted their range to higher elevations and towards the poles; and
  - non-polar glaciers have retreated, and in recent decades the extent and thickness of Arctic sea ice during late summer to early autumn has been reduced by about 40 percent (Exhibit 3).

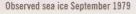
#### Did you know?

Carbon dioxide can remain in the atmosphere for up to 200 years, which means that stabilizing carbon dioxide emissions at current levels will not immediately stabilize atmospheric concentrations.

According to the Intergovernmental Panel on Climate Change, even once concentrations stabilize, temperatures will continue to increase for a century or more. Sea levels will continue rising for millennia, because ice will continue to melt, and because of the long time it takes for oceans to heat up and expand in response to higher air temperatures.

#### Exhibit 3 Changes in Arctic sea ice, 1979 to 2003







Observed sea ice September 2003

Source: NASA

#### Projected climate changes

- 13. Climate change models are used to assess the likelihood of potential changes and their possible impact. According to the IPCC, even the minimum predicted shifts in climate for the 21st century are likely to be significant and disruptive. While climate change will probably affect natural and socio-economic systems both beneficially and adversely, adverse effects are projected to predominate if the changes become more drastic or occur more swiftly. Our capacity to adapt may not be able to keep pace with the rate and magnitude of the climate change. Changes projected by the IPCC include the following:
  - The average global temperature may increase by 1.4 to 5.8 degrees Celsius between 1990 and 2100, increasing heat stress and mortality in human and natural systems. Higher temperatures are expected to expand the range of some dangerous "vector-borne" diseases such as malaria.
  - Global precipitation is expected to increase, but some areas such as the American grain belt and sub-Saharan Africa will likely become drier. In most tropical and subtropical regions, crop yields may decrease, and water is likely to become more limited in water-scarce areas of the world.
  - Sea level is projected to increase 9 to 88 centimetres by 2100, which could contaminate fresh water supplies, damage coastal resources such as beaches and fisheries, and potentially displace millions of people.
  - Extreme weather events, such as tropical cyclones and intense wind and rain storms, are expected to increase over some areas. More floods and droughts in many regions are likely.
  - While some animal and plant species will benefit, many of the world's endangered species may become extinct over the next few decades as warmer conditions alter their habitat and human development blocks them from migrating elsewhere.

#### Effects on Canada

14. Many nations, including Canada, have developed their own scientific programs to better understand the potential impacts of climate change at national and regional levels. According to the Government of Canada, climate change is expected to affect every region and virtually every sector of the Canadian economy. Agriculture, forestry, and fisheries will be particularly affected. While many of the effects of climate change are expected to be negative, there may be positive effects in some parts of Canada, such as

milder winters and longer growing seasons. In the Prairies, increased temperatures may provide opportunities for growing higher-value crops, but more frequent droughts and insufficient rainfall could negate those opportunities. For Canada, some of the potential negative effects of climate change include

- drier summers in the Prairies and central Canada.
- increases in pest outbreaks and forest fires,
- an increase in heat-related mortality and illness, and
- extensive thawing of permafrost in the North.

# **Addressing Climate Change**

- 15. The two basic responses to climate change are
  - mitigation—minimizing emissions and reducing atmospheric concentrations of greenhouse gases; and
  - adaptation—responding and adapting to climate change impacts.

Mitigation is considered essential for minimizing future impacts, and adaptation is essential for coping with effects that we cannot avoid in the near- to medium-term.

Mitigation—reducing emissions

16. Mitigation involves human intervention to reduce the sources or enhance the storage of greenhouse gas emissions. According to the Intergovernmental Panel on Climate Change (IPCC), no single option will reduce emissions enough to stabilize greenhouse gas concentrations, and a portfolio of options is needed.

#### **Energy production and consumption**

- 17. Since the production and consumption of fossil fuels is the largest source of greenhouse gas emissions from human activities, taking effective action to address climate change involves transforming the way we produce and use energy. Strategies to reduce emissions from the energy sector include
  - reducing the output of greenhouse gases for each unit of energy produced;
  - reducing energy consumption, for example, by increasing energy efficiency in key consuming areas: industry, buildings, equipment, and transportation; and
  - increasing the use of energy derived from non-fossil fuel sources, such as wind energy and ethanol.

#### Other mitigation options

- 18. Other mitigation options include reducing non-carbon dioxide emissions, for example, by recovering methane emissions from waste management and enhancing carbon storage in sinks. Carbon sinks are natural or man-made processes that remove greenhouse gases from the atmosphere. Carbon storage options include
  - protecting and enhancing storage in natural systems, such as forests and soils (which are natural carbon sinks); and
  - capturing carbon dioxide produced during energy production and consumption for long-term storage underground or in oceans.

#### The role of technology

19. According to the United Nations, the development and widespread use of new technologies plays a major role in climate change mitigation. Just as old technologies, such as coal-fired power stations and internal combustion engines, have contributed to an increase in emissions, so new and more efficient technologies can reduce emissions. Available technologies, such as wind turbines, hybrid engines, and carbon dioxide storage, offer some opportunities to reduce the emissions accumulating in the atmosphere.

# Adaptation—coping with climate change

20. According to the Intergovernmental Panel on Climate Change (IPCC), past emissions have already committed the Earth to some climate change, making adapting to climate change a necessary strategy that should go hand in hand with measures to mitigate against climate change. Climate change adaptation refers to adjustments made by natural or human systems in response to climate effects. Adaptation in human systems can be either reactive (responding to the immediate effects of climate change) or proactive, taking steps to prevent the effects of climate change. Governments react to immediate crises such as extreme weather events, but can also take a proactive approach by assessing potential future impacts and their risks, and by developing strategies to reduce these risks. Strategies can include changing design and construction standards to ensure that new construction is resilient to future weather extremes, and protecting coastal communities with seawalls. Rapid and significant climate change will make it more difficult to adapt than would lesser and slower change.

## Policy options

21. The United Nations document *United Nations Framework*Convention on Climate Change: The First Ten Years (2004) notes that the policies and measures selected by various countries to address climate

change have many common elements. These include an emphasis on transforming energy production and consumption practices, and addressing emissions in key sectors such as transportation, industry, agriculture, forestry, and waste. The report also outlines some options that governments can use to address climate change, including developing policies or programs to promote

- information, education, and public awareness, to sensitize the public to the issue, and to actions they can take;
- negotiating voluntary agreements with industry;
- research and development, including helping to advance climate change science and new technologies to address climate change;
- regulations and standards, such as energy efficiency standards for household appliances;
- market instruments, such as emissions trading systems (where emitters that reduce their annual emissions below voluntary or imposed limits can receive credit for the amount of pollution not emitted, and companies can save or trade credits for cash or other considerations on the open market); and
- economic and fiscal instruments, such as taxes on carbon dioxide emissions or energy use; financial incentives such as grants, subsidies, preferential loan rates and tariffs; and various types of tax relief.

## **Canada's International and Domestic Commitments**

#### The international context

22. The atmosphere has no boundaries, making climate change a global problem requiring international solutions. Developed countries account for the largest part of historical and current greenhouse gas emissions. Canada has among the highest per capita emissions in the world and contributes approximately two percent of global emissions. According to the United Nations, while per capita emissions in developed countries are expected to stabilize (at well above the world average), emissions from developing countries continue to rise steadily and are expected to equal those of developed countries in the early parts of this century. In China, even though per capita emissions are low compared to Canada's, the country's absolute emissions are substantial—about three billion tonnes of carbon dioxide in 2000—approximately four times higher than Canada's.

#### International agreements

# Article 3.1 of the United Nations Framework Convention on Climate Change states that

The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

Annex I Parties consist of industrialized or developed countries that in 1992 were members of the Organisation for Economic Co-operation and Development (OECD), and countries transitioning to a market economy, such as the former Fastery Block countries.

Annex II Parties consist of the OECD members of

Annex B Parties consist of developed nations as well as Central and Eastern European countries that accepted emissions targets under the Kyoto Protocol

#### **United Nations Framework Convention on Climate Change**

- 23. In 1992, Canada, along with more than 150 other countries, committed to reducing its greenhouse gas emissions by signing the United Nations Framework Convention on Climate Change at the United Nations Conference on the Environment and Development (also referred to as the Earth Summit). In December 1992, Canada became one of the first countries to ratify its signature to the Convention.
- 24. The Convention's ultimate objective is to stabilize greenhouse gas concentrations in the atmosphere at "a level that would prevent dangerous anthropogenic [human-induced] interference with the climate system." The Convention states that we need to stabilize emissions at a pace that allows ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable sustainable economic development to proceed. The Convention also recognizes that developed and developing countries have common but differentiated responsibilities and differing capacities to address climate change. Since they are richer and more industrialized, developed countries accepted the initial responsibility for cutting greenhouse gas emissions.

#### Canada's responsibilities under the Convention

- **25.** As an Annex I and II Party to the Convention, Canada promised to undertake a number of actions, including
  - implementing policies and measures to mitigate climate change,
  - adopting policies and measures to facilitate adaptation,
  - developing and implementing public education and awareness programs,
  - undertaking climate research and observation,
  - submitting regular "national communications" describing the policies and measures adopted, and
  - submitting annual inventories of greenhouse gas emissions by source and removals by sinks.

In addition, Annex II Parties must help developing countries to adapt, promote, and finance their access to environmentally sound technologies. For information on Canada's domestic response to its climate change commitments, see Exhibit 4.

## Exhibit 4 Timeline of key international and domestic climate change events

International Developments		Domestic Developments
First Commitment Period under the Kyoto Protocol  • Kyoto Protocol enters into force (February).	2008-12	The Government of Canada releases Project Green—Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment.
Canada hosts the eleventh Conference of the Parties to the Convention and first Meeting of the Parties to the Kyoto Protocol in Montreal.	2002	<ul> <li>The Government of Canada releases its Climate Change Plan for Canada.</li> <li>Canada ratifies the Kyoto Protocol.</li> <li>Canada's National Climate Change Business Plan 2002 is released.</li> </ul>
The Intergovernmental Panel on Climate Change releases its Third Assessment Report.	2001	<ul> <li>Canada's National Implementation Strategy on Climate Change and Canada's First National Climate Change Business Plan are developed jointly by federal, provincial, and territorial governments.</li> <li>Government of Canada Action Plan 2000 on Climate Change</li> </ul>
	(1993)	Canada signs the Kyoto Protocol and commits to reducing emissions to 6% below 1990 levels between 2008–12.      The First Ministers establish the National Climate Change Process.
The Kyoto Protocol is adopted in Kyoto, Japan.		The First Ministers establish the Hattorial Similate Grange Flocess
The Intergovernmental Panel on Climate Change releases its Second Assessment Report.	1995	Canada's National Action Program on Climate Change is released by federal, provincial, and territorial ministers of energy and environment.
The United Nations Framework Convention on Climate Change enters into force.		<ul> <li>Federal Action Program on Climate Change — "Leading the Way Forward" is announced by the Government of Canada; sets out federal actions under the national plan.</li> </ul>
		Canada's Energy Efficiency Act is proclaimed.
The United Nations Framework Convention on Climate Change is opened for signature at the United Nations Conference on the Environment and Development.	-(177)	Canada signs the Convention in June and ratifies it in December.
	1991	The Government of Canada introduces the Efficiency and Alternative Energy Program as a first step to limit emissions.
• Second World Climate Conference • The Intergovernmental Panel on Climate Change releases its First Assessment Report.	1990	<ul> <li>Canada commits to stabilizing emissions at 1990 levels by 2000.</li> <li>National Action Strategy on Global Warming is released by federal, provincial, and territorial governments.</li> <li>Canada's Green Plan for a Healthy Environment reiterates Canada's stabilization commitment.</li> </ul>
The Intergovernmental Panel on Climate Change is created.	(19m)	Canada convenes the World Conference on the Changing Atmosphere: Implications for Global Security, in Toronto.
First World Climate Conference	1979	

#### The Kyoto Protocol

- 26. In 1997, more than 160 countries, including Canada, negotiated the Kyoto Protocol aimed at strengthening the Convention. The Protocol has emissions targets for Annex B Parties, which include 38 developed countries and the European Union. Canada and more than 150 other countries have ratified or accepted the Protocol, while some signatories to the agreement, including the United States and Australia, have not. The Protocol became legally binding for its ratifying members on 16 February 2005.
- **27.** The Kyoto Protocol created several new mechanisms to allow Parties to reduce emissions in other countries and credit the results towards their own targets. The Kyoto mechanisms are intended to supplement domestic action and include
  - Joint Implementation, through which developed countries (Annex I Parties) acquire emissions credits by financially supporting projects in other Annex I countries.
  - an international emissions trading regime that will allow industrialized countries to buy and sell emissions credits amongst themselves; and
  - the Clean Development Mechanism, expected to stimulate projects in developing countries that reduce emissions and promote sustainable development.

Industrialized countries can receive credit for financing Clean Development Mechanism projects.

#### Canada's obligations under the Kyoto Protocol

- 28. Canada's Kyoto target. Canada's target is to reduce emissions of greenhouse gases covered under the Protocol to six percent below 1990 levels, over the period 2008 to 2012. Kyoto Protocol emission reduction targets cover six greenhouse gases.
- 29. Annex B Parties are subject to binding emission targets under the Kyoto Protocol. They have other responsibilities, which are listed in paragraph 25 above. They were required to make demonstrable progress towards achieving their commitments, and to report on the progress made, by 1 January 2006. The Protocol also requires them to include supplementary information in their reports, demonstrating compliance with their commitments under the Convention.
- **30.** Penalties for not meeting the Kyoto target. A Party that fails to meet its emission reduction target must make up the difference, plus

#### Did you know?

- There are six main greenhouse gases: three that occur naturally, and three that occur as a result of synthetic and industrial processes.
- The Kyoto Protocol sets targets for curbing emissions of these six greenhouse gases
- The three "natural" greenhouse gases are: carbon dioxide  $(\mathrm{CO_2})$ , methane  $(\mathrm{CH_4})$ , and nitrous oxide  $(\mathrm{N_2O})$ 
  - The three "man-made" greenhouse gases are sulphur hexafluoride (SF<sub>6</sub>) hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

an extra 30 percent, in the second Kyoto commitment period. It must also develop a compliance action plan. Its eligibility to participate in emissions trading may be suspended.

- 31. Parties to international agreements meet regularly to assess progress and discuss emerging issues. The Conference of the Parties to the United Nations Framework Convention on Climate Change (COP) is the supreme body of the Convention, comprising all states that have ratified the Convention. Eleven COP meetings have taken place since the agreement entered into force in 1994. In addition, there will be regular Meeting of the Parties to the Kyoto Protocol (MOP) sessions.
- 32. After the first commitment period. The initial commitment period of the Kyoto Protocol, which ends in 2012, is considered a first step towards addressing climate change. The eleventh conference of the Parties to the United Nations Framework Convention on Climate Change (usually called COP11) and the first Meeting of the Parties to the Kyoto Protocol (usually called MOP1) were held in Montreal in December 2005. At that time, the Parties agreed to begin discussions on post-2012 options and launched negotiations on the second Kyoto commitment period. At a follow-up meeting in Bonn, Germany, in May 2006, the Parties agreed to the agenda for negotiations on new emission reductions targets. To inform Canada's next steps, in 2005 the Government of Canada requested that the National Round Table on the Environment and the Economy provide advice regarding a long-term energy and climate change policy for Canada, and also requested that it consider options for post-2012 emission reduction targets.

33. Other international activities. Apart from formal international agreements negotiated through the United Nations, other groups and nations have made commitments to address climate change. For example, the Government of the United Kingdom made climate change one of its top two priorities during its 2005 presidency of the G8 and the European Union. In July 2005, at the G8 Gleneagles Summit in Scotland, G8 leaders, whose nations collectively account for over 65 percent of global gross domestic product and 47 percent of carbon dioxide emissions, issued a political statement on the importance of climate change and agreed to make "substantial cuts" in emissions. Also in July 2005, the United States, Australia, China, India, Japan, and South Korea formed the Asia-Pacific Partnership on Clean Development, to accelerate the development and deployment of clean energy technologies. The Partnership anticipates that each country will improve energy security, reduce pollution, and address climate change.

The National Round Table on the Environment and the Economy was established as an advisory body reporting to governments and the Canadian public. Its members are appointed by the Prime Minister and include leaders in business and labour, universities, environmental organizations, Aboriginal communities, and municipalities.

Carbon dioxide equivalent is used to standardize measurement of greenhouse gas emissions. Each greenhouse gas has its own global warming potential. For example, methane is 21 times more powerful than carbon dioxide. One tonne of methane is equivalent to 21 tonnes of carbon dioxide.

## The Canadian Context

#### Canada's greenhouse gas emissions

- 34. As a signatory to the United Nations Framework Convention on Climate Change, Canada is required to submit a greenhouse gas inventory annually, based on an internationally agreed-upon reporting format. The inventory measures emissions and removals (storage in "sinks") of major greenhouse gases. For ease of comparison, non-carbon dioxide emissions are expressed in terms of their carbon dioxide equivalent.
- 35. Exhibit 5 illustrates Canada's 2004 greenhouse gas emission inventory and shows the relative impact of the production and consumption of energy on Canada's emissions profile. Canada's energy-related emissions include those that are released when fossil fuels are produced, processed, transported, stored, and delivered.

The following also produce emissions through combustion of fossil fuels:

- energy industries, such as refineries and electricity generators;
- manufacturing industries and construction;
- road transportation, aviation, marine transportation, and rail transportation; and
- residential and commercial buildings, which produce emissions when fossil fuels are used for heating.

#### Jurisdictional issues

- **36.** In Canada, developing cost-effective responses to environmental issues that cross jurisdictional boundaries can involve action by all levels of government, and the efforts of industry, non-governmental organizations, and individual Canadians. Jurisdiction over energy is also divided among the federal, provincial, and territorial governments.
- 37. Federal jurisdiction. The federal government has jurisdiction over environmental issues that cross international and provincial boundaries. It addresses national concerns about the environment and negotiates, signs, and ratifies international treaties on behalf of Canada. With respect to energy, the federal government's responsibilities include policies and legislation in the national interest, nuclear power, and transboundary environmental impacts.
- **38.** Provincial jurisdiction. The provinces and territories have jurisdiction over natural resources within their boundaries, including

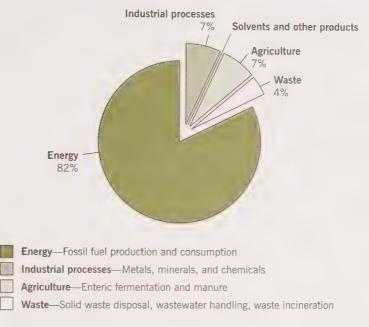


Exhibit 5 Energy use is the source of most of Canada's greenhouse gas emissions

Source: Adapted from Environment Canada's National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada (April 2006)

energy resources such as oil, natural gas, and coal. They control power generation, provincial building codes, and provincial transportation, including inspection and maintenance of vehicles on the road. Finally, they have jurisdiction over municipal governments, which also have an influence on greenhouse gas emissions through their management of local services, such as infrastructure, urban planning, and development.

#### Canada's response to climate change

**39.** Since 1990, the Government of Canada has established a variety of plans and strategies and other mechanisms to address climate change (Exhibit 4). The most recent plan, Project Green, was released in April 2005. A new plan is in development.

#### What Canada is doing with respect to its Kyoto target

**40.** The challenge in meeting Canada's Kyoto target is often expressed in terms of an "emissions gap." This is the difference between projected annual business-as-usual emissions (the emissions that would occur in the absence of any specific requirements to reduce emissions) in 2008–12, and Canada's Kyoto target.

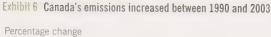
#### Did you know?

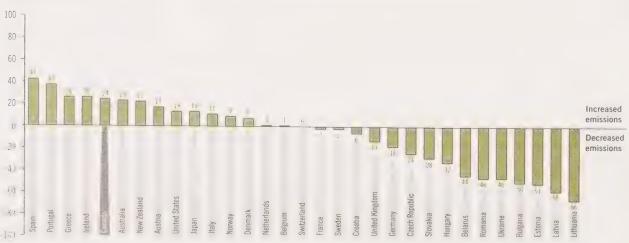
- One metric tonne equals 1,000 kilograms.
   The volume of one tonne of greenhouse gas emissions would fill one average two-storey, three-hedroom house
- One megatonne (Mt) equals one million metric tonnes of greenhouse gas emissions, enough to fill one million average two-storey, three bedroom houses.

41. According to the Government of Canada's National Inventory Report—Greenhouse Gas Sources and Sinks in Canada (1990–2004), in 2004, Canadians emitted 758 million tonnes of greenhouse gases into the atmosphere, 34.6 percent higher than Canada's Kyoto Protocol target. Much of this growth is attributed to increased emissions from energy industries and from transportation, whose emissions increased 41 percent and 30 percent respectively between 1990 and 2004. Within the energy industry, the increase is largely fuelled by increased demand for electricity and growing oil and gas production for export. Transport-related emissions account for over one-quarter of Canada's emissions, and within this sector the largest increase is from light trucks (including mini vans and sport utility vehicles)—an increase of more than 100 percent from 1990 to 2004.

#### **Comparing Canada to other countries**

42. Exhibit 6 shows how Canada's greenhouse gas emissions stack up with those of other countries. Canada and other highly industrialized countries increased their emissions. Countries with economies in transition experienced economic downturn, with reduced emissions. According to the United Nations, the reduced emissions of these countries more than offset the increased emissions by industrialized countries. As a group, Annex I countries had reduced emissions by 5.9 percent compared to 1990 levels. Every year, each Annex I Party submits a greenhouse gas emission inventory to the Secretariat for the





United Nations Framework Convention on Climate Change. The changes shown in Exhibit 6 are based on the total emissions that each country has reported.

# Conclusion

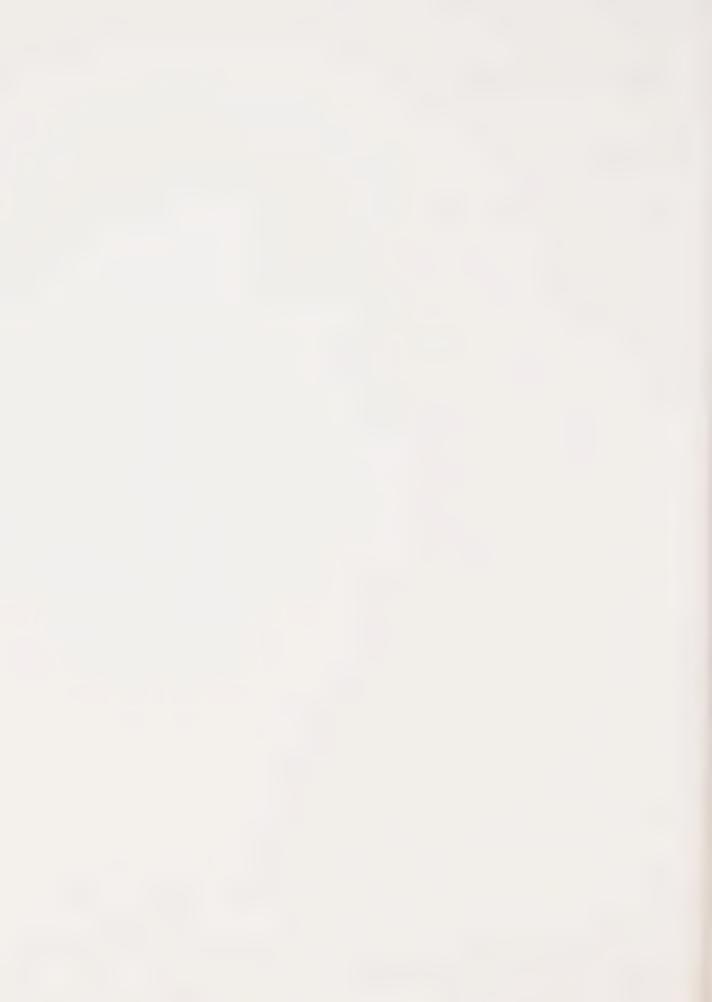
43. This overview has given background information on the issue of climate change to provide readers with context for the audit chapters that follow. The complex and multi-faceted nature of this topic means that we could not be comprehensive in our coverage. We leave it to readers to seek additional information and form their own conclusions. In keeping with our mandate, our performance audits look at whether activities designed to respond to federal environment and sustainable development policies are being implemented effectively and are delivering results. The audit chapters that follow provide our findings from auditing several aspects of the federal response to climate change.

Main Points— Chapters 1 to 5

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# Managing the Federal Approach to Climate Change

# Chapter 1

# **Main Points**

#### What we examined

Responsibility for Canadian action on climate change is shared among several federal organizations. They include a number of departments and agencies with widely differing mandates, and foundations such as Sustainable Development Technology Canada. The federal government also shares responsibilities with provincial and territorial governments; industry, municipal governments, and individual Canadians have significant roles to play as well.

We examined how the federal government is organized to manage its climate change activities, whether it is able to report the costs and the results of its efforts, and on what basis it developed key targets for reductions in greenhouse gas emissions.

We also reviewed two new tools the government has chosen to help achieve its climate change objectives. We looked at how ready the government is to implement an effective domestic system for the trading of greenhouse gas emissions. And we looked at Sustainable Development Technology Canada, a foundation the government established in 2001 to, among other things, help reduce greenhouse gas emissions through technological innovation.

## Why it's important

Canada has international commitments to reduce its greenhouse gas emissions, and specifically to reduce its emissions to 6 percent below 1990 levels between 2008 and 2012. Although the federal government has announced billions of dollars in funding since 1992 toward meeting these commitments, as of 2004 Canada's greenhouse gas emissions were 26.6 percent above 1990 levels.

Responding to climate change is a horizontal issue—that is, one whose management cuts across multiple departments, mandates, and jurisdictions. No single department, agency, or government has all the levers, resources, and expertise to manage this issue adequately. Effective governance and accountability are required to ensure that key departments work together in a coherent manner, co-ordinating their efforts to avoid duplication; and that Parliament and the public are able to fully scrutinize the costs and the results of those efforts.

If Canada is to reduce its greenhouse gas emissions enough to meet its commitments, it will need a comprehensive plan that addresses the major sources of emissions. Such a plan is required to help initiate the transformation that Canada's economy must undergo if the way it affects the climate is to change. It is critical that the federal approach in key sectors include policy tools and targets that are based on sound data, analysis, and management.

Sustainable Development Technology Canada has received \$280 million in federal funding dedicated to supporting and financing the development and demonstration of climate change technologies. It is important that it fund projects that can contribute to achieving the government's objectives for its climate change efforts.

#### What we found

- The government has yet to create an effective governance structure for managing its climate change activities. This is despite various studies that have pointed to the need for governance mechanisms and despite internal commitments made since 2003 to put in place a renewed governance structure for climate change.
- There is no government-wide consolidated monitoring and reporting of spending and performance information on climate change activities. The Treasury Board Secretariat is developing a system for capturing this information, but it is not yet fully operational, and responsibility for its management has not been assigned. The Secretariat was unable to provide us with documentation to fully substantiate its response to a parliamentarian's question in 2005, when it said that federal spending on climate change totalled \$1.6 billion. Nor were we able to accurately replicate the reported total expenditures using the available data. Until the current system is improved, it is not sufficiently accurate for managing and reporting purposes.
- Measures to reduce greenhouse gas emissions in the transportation and industry sectors—which together account for about 78 percent of Canada's greenhouse gas emissions—are not expected to bring emissions below 1990 levels; they may only slow the rate at which greenhouse gas emissions in these sectors continue to grow. A voluntary agreement with the automotive industry contains no provision for independent verification of the model, data, and results used to determine progress.
- The proposed systems for reducing greenhouse gas emissions from large industrial emitters and for domestic emissions trading are highly complex. Progress to date has been slow, and many issues, such as public disclosure of key data, have yet to be resolved.

Distinctive features of the domestic emissions trading system, particularly the \$15 per tonne price cap promised to industry, present potentially serious financial risks to the Canadian taxpayer that could range from zero to over \$1 billion.

• Environment Canada and Natural Resources Canada, the departments sponsoring Sustainable Development Technology Canada, have taken reasonable steps to oversee the Foundation's climate change activities under its funding agreements. For its part, the Foundation has taken reasonable steps toward fulfilling its climate change mandate. In all significant respects, it has adhered to its funding agreements with the government in its strategic decisions and its selection of projects for investment. It has also put in place a satisfactory process for measuring and reporting the results of its climate change activities, although it is too early to report on actual reductions in greenhouse gas emissions. However, we have some concerns with respect to the Foundation's reporting of projected reductions by 2010.

The audited organizations have responded. The organizations have accepted all of our recommendations; their responses are included with the related recommendations throughout the chapter. However, apart from some of the measures Natural Resources Canada and Sustainable Development Technology Canada have agreed to take, the responses make no firm commitment to specific actions with the time frames for implementation.



# Adapting to the Impacts of Climate Change

# Chapter 2

# **Main Points**

What we examined

We examined whether the federal government has strategies and action plans in place for adapting to and managing the impacts of climate change. We focussed on the work of Environment Canada and Natural Resources Canada in this area. In addition, we examined the work of Public Safety and Emergency Preparedness Canada, Health Canada, and Agriculture and Agri-Food Canada, three departments responsible for areas likely to be affected by climate change. We also looked at whether Indian and Northern Affairs Canada is addressing the implications of climate change in the North.

We also assessed whether the federal government has taken steps to obtain, analyze, and share the information needed to identify the potential impacts to which Canadians are exposed because of climate change. We focussed on the work of Environment Canada and Natural Resources Canada in climate modelling (which provides information on possible future climate conditions), collecting and analyzing climate observations, and conducting research on the impacts of climate change and means of adapting to them.

### Why it's important

Canada is vulnerable to the impacts of climate change. More extreme and intense weather events, such as extended heat waves and winter storms, increase the risk to Canadians' health and safety. Climate change is expected to create additional stresses on Canada's water resources. It is also likely to trigger adverse socio-economic impacts in regions that depend on natural resource industries such as forestry and agriculture. The effects of warming are expected to be greater in Canada's northern latitudes than in other regions; many aspects of life in the North are already affected by melting permafrost and reduced sea ice.

Canada has committed to facilitating adaptation to the expected impacts of climate change. Taking steps now to adapt to a changing climate can help protect Canadians and their assets and reduce the potential economic, social, and environmental costs.

#### What we found

- The government has not yet put in place key measures to support Canadians in adapting to a changing climate. Nor has it clarified how it intends to manage its own adaptation efforts.
- The government has not developed a strategy for federal adaptation efforts to indicate the expected results and timelines, and which departments would assume what responsibilities. Federal progress in working with provinces and territories has been limited.
- Some departments we examined have begun work on their own strategies, but only one has been completed. Departments have made limited progress in using available information about the changing climate to assess potential implications on federal policies and programs.
- The federal government has supported the development of knowledge through impacts and adaptation research and initiatives that involve working with decision makers on adaptation solutions. There is sufficient information for adaptation to proceed. However, the federal government has not yet organized its activities in climate science to make sure that the federal departments and others obtain needed information. For example, there is a lack of up-to-date climate information for use in adapting the design of infrastructures such as storm sewers, and limited information is available to the public on possible future climate conditions in their area.

The departments and central agencies have responded. The departments and central agencies have accepted all of our recommendations; responses are included with the related recommendations throughout the chapter. However, the responses make no firm commitment to specific actions with time frames for implementation.



# Reducing Greenhouse Gases Emitted During Energy Production and Consumption

# **Chapter 3** Main Points

What we examined

Natural Resources Canada (NRCan) is the department that receives the majority of the federal funds aimed at reducing greenhouse gas emissions. It is responsible for implementing federal energy policies and for most federal programs intended to reduce greenhouse gas emissions from energy production and consumption in Canada. The Department is accountable for delivering reductions in greenhouse gas emissions through its policies and programs.

We looked in detail at three NRCan programs that each received \$100 million or more in federal funding earmarked for climate change programs. They provide examples of different areas where NRCan supports efforts to reduce greenhouse gas emissions: the Wind Power Production Incentive (renewable energy), the EnerGuide for Existing Houses program (energy efficiency), and the Ethanol Expansion Program (renewable fuels). We examined what greenhouse gas emission reductions the three programs have achieved, what they have cost, and how the Department monitors and reports on program results and spending. We also examined to what extent NRCan has learned from experience and taken steps to reduce risks in managing its programs. (Near the end of our audit, one of these programs, EnerGuide for Existing Houses, was discontinued).

Finally, we looked more broadly at other emission reduction efforts in the oil and gas sector, and the areas of wind power and home energy efficiency to see whether the Department can demonstrate what its programs and other activities have contributed to the emission reductions targeted in the federal government's plans for addressing climate change.

Why it's important

Energy production and consumption account for more than 80 percent of the greenhouse gas emissions in Canada. And compared with 1990, emissions have risen considerably, largely due to the production and consumption of fossil fuels like oil, natural gas, and coal.

In almost every aspect of their daily lives, Canadians need energy in the form of fuel, electricity, or heat. The national economy also depends on the production of energy, both for domestic use and for export. However, producing and consuming non-renewable energy releases pollutants into our air, water, and soil. Among those pollutants are greenhouse gases, which governments of many countries, including Canada, have formally linked to climate change.

Changing the way Canadians produce, distribute, and consume energy is therefore critical. As part of its response to climate change, the federal government has announced billions of dollars to support actions aimed at reducing emissions from major Canadian sources.

#### What we found

- Each of the three programs we examined in detail was funded to reduce greenhouse gas emissions, and they have made progress. As of March 2006, spending on the programs had achieved about 22 percent of the 4.8 million-tonne reduction that NRCan expected the programs to achieve by 2010. However, emission reduction targets for these programs were confusing, making it difficult to determine the actual results that were expected. Further, NRCan did not consistently report publicly on how these programs performed against emission reduction and other targets, making it difficult to hold the Department to account for its results.
- The Wind Power Production Incentive has stimulated investment in Canada's wind power industry during its infancy. The program has made progress toward its targets for electricity generation and greenhouse gas emission reduction, though less than anticipated.
   NRCan is adjusting the program based on lessons learned, to be ready should additional funds be approved. The Department has yet to lead the establishment of a long-term strategy for wind power in Canada, identifying where governments can be most effective.
- Oil and gas production, particularly the rapid development of Canadian oil sands, is significantly increasing greenhouse gas emissions. Yet few federal efforts are underway to reduce these emissions, and those efforts have had minimal results to date. For its part, the federal government is counting on regulatory and long-term technological solutions to achieve future reductions in this sector. However, it is not leading the way by clearly stating how and to what degree Canada will reduce greenhouse gas emissions when oil and gas production is expected to increase.

The Department has responded. Natural Resources Canada generally agrees with the recommendations in this chapter. However, in some circumstances, we note that its response does not fully indicate what action it intends to take and the timing for doing so.



# Sustainable Development Strategies

# Chapter 4

# **Main Points**

What we examined

We examined the progress made by federal departments and agencies toward meeting the commitments they made in their sustainable development strategies. We looked at 39 commitments published in the strategies of 21 departments.

Why it's important

Sustainable development is based on the efficient and environmentally responsible use of natural, human, and economic resources. This includes sustaining our natural resources, protecting the health of Canadians and ecosystems, and improving our quality of life and well-being.

The sustainable development strategies of its departments and agencies are an important tool by which the federal government can advance sustainable development. The strategies set out goals, objectives, and specific commitments. Effective action to achieve these commitments is fundamental to both the credibility and the impact of the strategies. Our role in independently auditing and reporting on commitments ensures that Parliament and Canadians are kept informed of the government's progress toward sustainable development.

What we found

- Progress has been satisfactory on 27 of the 39 commitments we examined.
- Departments that have made satisfactory progress toward their commitments generally have well-functioning management systems to plan for achieving the commitment, to implement the plan, and to monitor their progress.
- Departments where progress has been unsatisfactory generally lack such systems and have made minimal efforts toward meeting their commitments. This is of particular concern given the number of years that departments and agencies have had to develop the necessary management systems.
- In some cases, the progress achieved by a department or agency represents an important step toward environmental protection and sustainable development. For example, Indian and Northern Affairs

Canada made good progress in implementing a management framework to promote and track initiatives that reduce greenhouse gas emissions in Aboriginal and northern communities.

• During the course of auditing the commitments, we found other encouraging signs that organizations are moving forward to make sustainable development part of their operational planning. For example, the Government of Canada has fostered co-ordination across federal organizations to ensure sustainability principles are fundamental to planning for the 2010 Olympic and Paralympic Winter Games. Agriculture and Agri-Food Canada has placed the consideration of sustainable development principles as one of the core elements of the Agricultural Policy Framework.

Environment Canada and the Treasury Board Secretariat have responded. Environment Canada and the Treasury Board Secretariat agree with our recommendation.



# **Environmental Petitions**

# Chapter 5

# **Main Points**

#### What we examined

This is the annual report that the Commissioner of the Environment and Sustainable Development provides to Parliament on the environmental petitions process as required by the *Auditor General Act*. This chapter reports on new petitions received between 1 July 2005 and 30 June 2006.

An environmental petition is a letter to the Auditor General on environmental issues, which the Commissioner of the Environment and Sustainable Development directs to the responsible federal ministers for a response.

In keeping with the focus of the Commissioner's report this year on climate change, this chapter also reports on an audit of the federal government's response to a petition concerning the purchase of green power—power derived from low-impact renewable sources of energy, such as wind. We examined actions taken by Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada to purchase green power and help develop markets for green power.

# Why it's important

The environmental petitions process, which is administered by the Commissioner on the Auditor General's behalf, is one way Canadians can hold their government to account for its decisions and actions on environmental matters in the context of sustainable development. Among other things, the process allows both citizens and organizations to ask ministers to investigate environmental problems, explain federal policy, and examine the enforcement of environmental legislation. Petitions have resulted in commitments by ministers and action by departments on environmental issues.

Monitoring and auditing petition responses allow us to examine issues brought forward by Canadians that otherwise may not have been drawn to our attention. In our audits of responses, we assess whether federal ministers are meeting their commitments to act on issues raised in the petitions.

The purchase of green power is one of the cornerstones of the federal government's plan to demonstrate leadership in its response to climate change by reducing its own greenhouse gas emissions. In response to a petition in 2002, the government made a commitment to purchase 20 percent of its electricity from green power sources by 2006. The purchase of green power by the federal government can also play an important role in supporting the development of Canada's capacity to produce green power.

#### What we found

- Report on the petitions process. Statements and commitments made by federal ministers in response to petitions have addressed important issues raised by Canadians. Since 2001, climate change and air quality issues have been referenced increasingly in environmental petitions received by the Auditor General of Canada. Our review of the government's responses to these petitions indicates that most addressed the petitioners' questions or explained the government's position on the issues raised. However, some responses failed to address the specific questions asked by petitioners. In our annual report, we observe that the clarity of the questions in petitions has improved and that petitions are generating action.
- Green power purchasing. The federal government has made progress in fostering green power markets in some provinces. However, it has achieved only one third of its objective to purchase 20 percent of its power from green sources by 2006 and has not been contributing as expected to the reduction of greenhouse gas emissions through the Purchase of Electricity from Renewable Resources (PERR) program. Although the PERR program has potential to contribute toward developing green power markets and reducing greenhouse gas emissions, the existing governance of the program remains a key barrier to its success.

The departments and the Treasury Board Secretariat have responded. Environment Canada, Natural Resources Canada, Public Works and Government Services Canada, and the Treasury Board Secretariat have agreed with our recommendation. Their responses follow the recommendation in the chapter.

# Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—2006

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**Chapter 2** Adapting to the Impacts of Climate Change

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**Chapter 4** Sustainable Development Strategies

**Chapter 5** Environmental Petitions







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2006



Report of the
Commissioner of the
Environment and
Sustainable Development

to the House of Commons

Chapter I Managing the Federal Approach to Climate Change



Office of the Auditor General of Canada





Report of the

# Commissioner of the Environment and Sustainable Development

to the House of Commons

#### Chapter 1

Managing the Federal Approach to Climate Change



Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.



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### Chapter

Managing the Federal Approach to Climate Change

The audit work reported in this chapter was conducted in accordance with the legislative mandate, policies, and practices of the Office of the Auditor General of Canada. These policies and practices embrace the standards recommended by the Canadian Institute of Chartered Accountants.

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# Managing the Federal Approach to Climate Change

#### **Main Points**

#### What we examined

Responsibility for Canadian action on climate change is shared among several federal organizations. They include a number of departments and agencies with widely differing mandates, and foundations such as Sustainable Development Technology Canada. The federal government also shares responsibilities with provincial and territorial governments; industry, municipal governments, and individual Canadians have significant roles to play as well.

We examined how the federal government is organized to manage its climate change activities, whether it is able to report the costs and the results of its efforts, and on what basis it developed key targets for reductions in greenhouse gas emissions.

We also reviewed two new tools the government has chosen to help achieve its climate change objectives. We looked at how ready the government is to implement an effective domestic system for the trading of greenhouse gas emissions. And we looked at Sustainable Development Technology Canada, a foundation the government established in 2001 to, among other things, help reduce greenhouse gas emissions through technological innovation.

#### Why it's important

Canada has international commitments to reduce its greenhouse gas emissions, and specifically to reduce its emissions to 6 percent below 1990 levels between 2008 and 2012. Although the federal government has announced billions of dollars in funding since 1992 toward meeting these commitments, as of 2004 Canada's greenhouse gas emissions were 26.6 percent above 1990 levels.

Responding to climate change is a horizontal issue—that is, one whose management cuts across multiple departments, mandates, and jurisdictions. No single department, agency, or government has all the levers, resources, and expertise to manage this issue adequately. Effective governance and accountability are required to ensure that key departments work together in a coherent manner, co-ordinating their efforts to avoid duplication; and that Parliament and the public are able to fully scrutinize the costs and the results of those efforts.

If Canada is to reduce its greenhouse gas emissions enough to meet its commitments, it will need a comprehensive plan that addresses the major sources of emissions. Such a plan is required to help initiate the transformation that Canada's economy must undergo if the way it affects the climate is to change. It is critical that the federal approach in key sectors include policy tools and targets that are based on sound data, analysis, and management.

Sustainable Development Technology Canada has received \$280 million in federal funding dedicated to supporting and financing the development and demonstration of climate change technologies. It is important that it fund projects that can contribute to achieving the government's objectives for its climate change efforts.

#### What we found

- The government has yet to create an effective governance structure for managing its climate change activities. This is despite various studies that have pointed to the need for governance mechanisms and despite internal commitments made since 2003 to put in place a renewed governance structure for climate change.
- There is no government-wide consolidated monitoring and reporting of spending and performance information on climate change activities. The Treasury Board Secretariat is developing a system for capturing this information, but it is not yet fully operational, and responsibility for its management has not been assigned. The Secretariat was unable to provide us with documentation to fully substantiate its response to a parliamentarian's question in 2005, when it said that federal spending on climate change totalled \$1.6 billion. Nor were we able to accurately replicate the reported total expenditures using the available data. Until the current system is improved, it is not sufficiently accurate for managing and reporting purposes.
- Measures to reduce greenhouse gas emissions in the transportation and industry sectors—which together account for about 78 percent of Canada's greenhouse gas emissions—are not expected to bring emissions below 1990 levels; they may only slow the rate at which greenhouse gas emissions in these sectors continue to grow. A voluntary agreement with the automotive industry contains no provision for independent verification of the model, data, and results used to determine progress.
- The proposed systems for reducing greenhouse gas emissions from large industrial emitters and for domestic emissions trading are highly complex. Progress to date has been slow, and many issues, such as public disclosure of key data, have yet to be resolved.

Distinctive features of the domestic emissions trading system, particularly the \$15 per tonne price cap promised to industry, present potentially serious financial risks to the Canadian taxpayer that could range from zero to over \$1 billion.

• Environment Canada and Natural Resources Canada, the departments sponsoring Sustainable Development Technology Canada, have taken reasonable steps to oversee the Foundation's climate change activities under its funding agreements. For its part, the Foundation has taken reasonable steps toward fulfilling its climate change mandate. In all significant respects, it has adhered to its funding agreements with the government in its strategic decisions and its selection of projects for investment. It has also put in place a satisfactory process for measuring and reporting the results of its climate change activities, although it is too early to report on actual reductions in greenhouse gas emissions. However, we have some concerns with respect to the Foundation's reporting of projected reductions by 2010.

The audited organizations have responded. The organizations have accepted all of our recommendations; their responses are included with the related recommendations throughout the chapter. However, apart from some of the measures Natural Resources Canada and responses make no firm commitment to specific actions with the time frames for implementation.

#### Introduction

For a detailed description of the climate change issue, please consult **The Commissioner's Perspective**, which includes a section called **Climate Change**—**An Overview**.

- 1.1 Canada has made important commitments to address climate change. When Canada signed the Framework Convention on Climate Change in 1992, among other international legal obligations, it committed to adopting policies and measures to reduce its greenhouse gas emissions and promote adaptation to climatic changes. In 1997 the government adopted the Kyoto Protocol and subsequently pledged to reduce Canada's greenhouse gas emissions to six percent below 1990 levels during the commitment period of 2008 to 2012.
- 1.2 Addressing climate change requires the co-operation of many players. While the responsibility for signing international agreements rests with the federal government, all players must co-operate if Canada is to meet this challenge. Federal players include Environment Canada, Natural Resources Canada, Transport Canada, Foreign Affairs and International Trade Canada, the Canadian International Development Agency, Indian and Northern Affairs Canada, Industry Canada, Public Works and Government Services Canada, Infrastructure Canada, Agriculture and Agri-Food Canada, the Treasury Board Secretariat, the Privy Council Office, Finance Canada as well as federally funded foundations such as Sustainable Development Technology Canada. While the provincial and territorial governments, industry, municipal governments, and individual Canadians also have significant roles to play, this chapter reports on the actions of some of the key federal players.
- 1.3 The federal government's response to climate change has evolved. Since 1997, the Government of Canada has made incremental investments in climate change through successive budgets. These investments supported measures in the three federal climate change plans that Canada has unveiled since 1997:
  - Government of Canada Action Plan 2000 on Climate Change
  - Climate Change Plan for Canada (2002)
  - Project Green—Moving Forward on Climate Change: A Plan for Honouring Our Kyoto Commitment (2005)

Each plan built on past actions and proposed new measures to achieve Canada's climate change objectives. Exhibit 1.1 summarizes the three different plans that the government has produced, within the context of major Kyoto events. Exhibit 1.2 summarizes the major related funding announcements that have occurred during this period.

#### Did you know?

Prior to 1997, the Government of Canada released two national climate change plans, which involved the participation of provincial governments and other stakeholders:

- the 1990 National Action Strategy on Global Warming, and
- the 1995 National Action Program on Climate Change.

Government expenditures to 31 March 2005 on climate change initiatives have been primarily in the areas of mitigation programs and transfers to foundations. Lesser amounts were spent on international programs, public education and outreach, climate change science, impacts and adaptation, technology and innovation, and policy development

1.4 Climate change requires transformative change. According to the federal government, the 2005 plan was not designed just to reduce greenhouse gases but to transform the way Canada's social and economic practices affect the climate. In past reports we have made several recommendations for government action to begin the needed change (Exhibit 1.3).

#### Focus of the audit

- 1.5 We examined major elements of how the federal government is managing its approach to climate change, including whether
  - the government has in place a suitable management framework for the climate change initiative,
  - the government is assessing major federal spending related to climate change in a way that enables it to report fairly and reliably on the costs involved in the climate change initiative, and

Summary of the three different federal plans to address greenhouse gas emissions since 1997

#### Summary of the different plans

Action Plan 2000 This plan covered new and existing measures targeting key sectors (such as oil and gas, thermal electricity, transportation, and buildings), which together accounted for over 90 percent of Canada's emissions. These measures were expected to achieve emission reductions of 65 million tonnes.

#### Climate Change Plan for Canada

This Plan set out a three-step approach for reducing annual greenhouse gas emissions by 240 million tonnes. First, it outlined actions under way that were expected to address 80 million tonnes. Second, it articulated a strategy for a further 100-million-tonne reduction across seven key areas for action, such as the transportation sector and large industrial emitters. Third, it outlined a number of potential future actions that could enable Canada to address the remaining 60-million-tonne reduction.

Project Green This plan emphasized transformative, long-term change, while ensuring economic growth. Key elements included the Large Final Emitter System, domestic and international emissions trading, and an agreement with the automotive industry. Together, all of the elements of this plan were expected to reduce emissions by about 270 million tonnes annually in the 2008 to 2012 period.

Environment Canada has indicated that another Made-in-Canada plan is being developed.

Canada adopted Kyoto Protocol Canada signed Kyoto Protocol Canada ratified Kyoto Protocol Kyoto Protocol came into force internationally

Kyoto Protocol Commitment Period

Kyoto events

Exhibit 1.2 Summary of federal climate change funding announcements between 1997 and 2005

Year	Climate change funding announcements		
1997	\$60 million		
1998	\$150 million		
2000	\$1.12 billion		
2001	\$405 million		
2003	\$2.00 billion		
2004	\$800 million		
2005	\$1.82 billion*		
Total	\$6.36 billion		

<sup>\*</sup> Budget 2005 also allocated an additional \$1.51 billion for the period from 2010 to 2020 to develop alternative energy sources, such as wind power.

#### Exhibit 1.3 Past audit observations—key management issues raised

In the Commissioner's 1998 Report, Chapter 3, Responding to Climate Change—Time to Rethink Canada's Implementation Strategy, we concluded that the failure to meet Canada's climate change commitments was primarily the result of poor planning and ineffective management. We recommended that the federal government take the lead, in collaboration with other levels of government and major stakeholders, in a determined national effort designed to achieve Canada's climate change commitments. This effort would take the form of a formal, results-based implementation plan with

- · performance expectations,
- · interim targets, and
- · a monitoring system.

In the Commissioner's 2001 follow-up report, Chapter 6, Climate Change and Energy Efficiency: A Progress Report, we noted that the federal government had made some progress in developing a management structure for climate change, but none in providing comprehensive information to Parliament. We noted that the federal government needed to continue to

- · clarify federal roles and responsibilities,
- develop a broader portfolio of measures to meet Canada's climate change commitments, and
- · provide fuller information to Parliament.

In the Auditor General's 2000 Report, Chapter 20, Managing Departments for Results and Managing Horizontal Issues for Results, we recommended that the Treasury Board Secretariat play a stronger leadership role in horizontal issues, including ensuring that resources are available for co-ordination and management.

In the Auditor General's 2005 Report, Chapter 4, Managing Horizontal Initiatives, we noted that the insufficient attention the Privy Council Office and the Treasury Board Secretariat have paid to horizontal initiatives has caused weaknesses in

- · horizontal governance,
- · accountability, and
- · co-ordination.

- the government's targets and policy tools for reducing greenhouse gas emissions in the areas of transportation and large industrial emitters are based on sound data and analysis.
- 1.6 We also examined how the government is using two new mechanisms as tools to help reach its targets for reducing greenhouse gas emissions. We looked at its preparedness to implement an effective domestic greenhouse gas emissions trading system in Canada. We also examined the climate change activities of Sustainable Development Technology Canada, a foundation established by the government to invest in developing and demonstrating new sustainable technologies.
- 1.7 During the course of the audit, an election took place and the Government of Canada changed. Since taking power in February 2006, the new government has indicated that some policy changes with regards to climate change may occur and that another climate change plan is being developed. Given that many of these elements have not been finalized, they are not all reflected in the audit report.
- **1.8** More information on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of the chapter.

#### Observations and Recommendations

#### Managing the federal approach

#### Canada is not on track to reduce its total greenhouse gas emissions

- 1.9 Canada's current greenhouse gas emissions are rising—the Kyoto gap is growing. According to the 2004 greenhouse gas emissions inventory data from Environment Canada, Canada's emissions are 26.6 percent higher than they were in 1990, resulting in a gap of 34.6 percent from Canada's Kyoto target. As the gap continues to widen and more time passes, the Kyoto target is becoming more difficult to attain (Exhibit 1.4).
- 1.10 Evolution of the approach to climate change. Canada adopted the Kyoto Protocol in 1997. We expected that the federal government would have conducted economic, social, environmental, and risk analyses in support of its decision to sign the Kyoto Protocol in 1998, before taking on what the Government of Canada now considers to be the most challenging target among Kyoto signatories. With regards to the specific target, we found that little economic analysis was completed, and the government was unable to provide evidence of detailed social, environmental, or risk analyses. The federal government made a decision to set its target at minus six percent to be

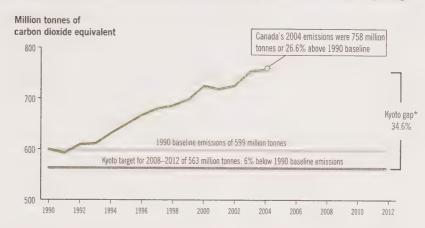


Exhibit 1.4 The gap between Canada's greenhouse gas emissions and its Kyoto target is growing

\* Mathematical procedures for calculating the gap do not involve adding the percentages. In addition, percentages have been calculated using the original unrounded numbers.

Source: Adapted from Environment Canada's National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada (April 2006)

in line with its major trading partners and, in particular, to be close to the minus seven percent target that the United States was expected to adopt at that time.

- 1.11 Regardless of that decision, the government recognized that new approaches, including a major economic tool, would be needed to meet the challenge. In 1998, federal, provincial, and territorial governments established a multilateral National Climate Change Process to engage them and other stakeholders in examining the impacts, costs, and benefits of addressing climate change. The federal government noted that some immediate measures were also required to gain momentum and engage the public. Action Plan 2000 introduced transitional actions in all sectors.
- 1.12 The National Climate Change Process ended in October 2002. However, the provinces and territories still need to be involved if Canada is to achieve its goals. The federal government has since worked bilaterally with the provinces and territories to negotiate memoranda of understanding as the basis for co-operating on climate change and sharing the costs of some programs and projects.
- 1.13 Following ratification of the Protocol in 2002, the federal government placed greater emphasis on meeting its Kyoto target. The 2002 plan therefore built on actions under way and introduced new measures to reduce emissions. The 2005 plan went one step further, linking economic prosperity and environmental progress through market-based mechanisms such as emissions trading.

Governance—The processes and structures through which power and authority are exercised, including the decision-making processes. It answers the questions: Who participates? How do they participate?

Accountability—The obligation to demonstrate and take responsibility for performance in light of agreed-upon expectations. It answers the question: Who is responsible to whom and for what'

Performance—To demonstrate how well things are done with regard to expected results. It answers the questions: Are the expected results accomplished? Are they accomplished within budget and in the most efficient manner? Are there undue, unintended consequences?

1.14 While signatories to the Kyoto Protocol recognize that it is only the first phase of ongoing international action on climate change, Canada has not yet joined some other industrialized countries in establishing a long-term emission reduction objective or strategy.

#### Governance mechanisms for climate change are inadequate

- 1.15 In our 1998 Report, we noted that the federal government needed to apply the basics of good management—governance and accountability—to a subject as complex as climate change. At a minimum we expected that the government would clarify its leadership role and the roles and responsibilities of the various federal players in achieving Canada's climate change commitments. Governance and accountability mechanisms apply to all elements of the federal government's climate change approach from mitigation to impacts and adaptation. The federal government's progress since then has been sporadic.
- 1.16 Several recent studies have commented on the need for governance mechanisms to manage federal climate change activities. In 2005, the House of Commons Standing Committee on the Environment and Sustainable Development found that actions to reduce greenhouse gas emissions were ad hoc, lacked an overall strategy, and did not have an accountability framework. Environment Canada, in a risk assessment it completed in April 2004, found there was no central ownership of the initiative, leading to non-integrated policies.
- 1.17 Addressing a complex, long-term challenge such as climate change, like any other horizontal initiative, requires well-designed mechanisms to
  - co-ordinate federal activities across departments,
  - hold departments accountable for their performance against agreed-upon objectives, and
  - report to Parliament and Canadians about the overall performance of the initiative.
- 1.18 Chapter 4 of the November 2005 Report of the Auditor General said that the Privy Council Office and the Treasury Board Secretariat had not given enough sustained attention to how horizontal initiatives were set up and managed. The report noted that roles and responsibilities in the selected horizontal initiatives examined (not including climate change) were not defined clearly and that accountability frameworks were inadequate. While we recognized that

federal departments and agencies should manage initiatives, we expected that the central agencies would ensure appropriate governance, accountability, and co-ordination.

- 1.19 Earlier co-ordination mechanisms have been phased out and not replaced. In 1998, the federal government created a Climate Change Secretariat, with a mandate to co-ordinate federal government actions and to work with provincial governments and industry on a national strategy. The Secretariat chaired a number of interdepartmental committees and reported jointly to the deputy ministers of Natural Resources Canada and Environment Canada.
- 1.20 The Climate Change Secretariat provided a forum for co-ordinating and integrating the efforts of departments and was responsible for preparing reports to Parliament on federal climate change activities and their results. The Climate Change Secretariat was phased out in 2004.
- 1.21 The roles of Natural Resources Canada and Environment Canada have changed over time. Following the 1997 adoption of the Kyoto Protocol, Natural Resources Canada led the development and co-ordination of Canada's domestic implementation strategy, while Environment Canada had primary responsibility for overall environmental policy. The two departments were co-leads for implementing Action Plan 2000 in collaboration with five other departments, and were jointly responsible for overseeing the implementation of the emissions reductions package approved in 2003. In 2002, Natural Resources Canada was given responsibility to negotiate with industry on an approach for reducing their greenhouse gas emissions; in May 2005, this responsibility was transferred to Environment Canada. Environment Canada currently has the lead responsibility for climate change including co-ordination with other federal departments to identify and develop specific priorities and activities to support the federal strategy.
- 1.22 Since 2003, documents prepared for ministers have indicated that, in light of the government's strengthened response to climate change, renewed governance mechanisms and institutions would soon be put in place. However, to date, many elements of an effective governance structure are still lacking. These include
  - clear definitions of the roles and responsibilities of departments and central agencies,
  - appropriate co-ordinating bodies and supporting management structures, and

- an oversight capacity to hold departments accountable for performance against agreed-upon objectives and to report to Parliament and Canadians about the overall performance of the climate change initiative.
- 1.23 Development of accountability tools has been delayed. Involving a number of departments in an initiative increases the complexity and importance of effective performance measurement and reporting. Developing performance indicators and appropriate information management systems is essential. To this end, under the leadership of the Treasury Board Secretariat, in 2003, departments responsible for climate change programs undertook to develop a management and accountability framework for climate change.
- 1.24 According to guidance provided by the Treasury Board Secretariat, the management and accountability framework for any horizontal issue should
  - · describe the roles and responsibilities of the main partners,
  - · describe the logical sequence of activities and results,
  - · determine appropriate performance measures,
  - · set out the evaluation framework, and
  - ensure adequate reporting on results.
- 1.25 The management and accountability framework for climate change is a prototype—the first of its kind for a major horizontal initiative. While the Treasury Board Secretariat has not usually played an active role in managing horizontal initiatives, it became involved in the climate change issue to develop management tools and processes that it could apply to similar initiatives. The Secretariat has indicated that progress on developing the framework has been slow because of the need to develop new approaches and to collaborate extensively with departments.
- 1.26 Work on completing the management and accountability framework was set aside to carry out a review of climate change programs announced in the 2005 Budget and in the 2005 climate change plan. Two essential parts of the framework remain outstanding: the development of governance mechanisms and the implementation of the performance management framework. The status of work on the governance mechanisms is unknown. The Treasury Board Secretariat has indicated that it intends to update the performance management framework in the 2006–07 fiscal year.

#### Reporting to Parliament and the public is deficient

Spending information still not integrated. Gathering and summarizing data on spending by horizontal initiatives is difficult, as existing government systems are not designed to collect and report spending across departments. Work to date on the management and accountability framework has included developing an electronic system to capture financial information on climate change programs for management purposes. In 2004, departmental program managers were requested to provide information on the funds authorized, committed, and spent on climate change programs, which the Treasury Board Secretariat entered in its electronic system. However, the Secretariat has not yet fully verified the departmental data reported to ensure that it is accurate and complete, nor has it been updated. The system does not include funds transferred to foundations and details of their spending. An update of the financial data is planned for the summer of 2006, including relevant departmental sign-offs from chief financial officers.

**1.28** Exhibit 1.5 illustrates one use of such information and the problems that can occur when the information is not current and verified. Until the current system is improved, it is not sufficiently accurate for management and reporting purposes.

### Exhibit 1.5 Federal government's response to a parliamentarian's question on climate change expenditures

Between 1997 and 2003, the federal government announced \$3.7 billion in climate change funding. In March 2005, a parliamentarian asked how much of this money had been spent on Canada's preparations to meet its Kyoto Protocol commitments. The Treasury Board Secretariat prepared summary and contextual information for the interdepartmental response to the question, and individual departments provided details of the departmental expenditures.

According to the reported response, by the end of fiscal year 2003–04, federal departments had disbursed \$1.6 billion of the \$3.7 billion allocated (including \$710 million transferred to foundations such as Sustainable Development Technology Canada).

We reviewed the detailed expenditures reported by departments and recorded by the Secretariat in its database and were unable to reconcile them to the total that was reported. The Secretariat informed us that it had used a combination of financial information from its database, updated financial information reported by departments, and funds allocated to foundations to prepare the summary of climate change expenditures. However, it was unable to provide us with documentation to fully substantiate the total it had reported. The detailed departmental figures included in the response were about \$250 million less than the \$1.6 billion reported. The Secretariat explained that these differences were the result of a double-counting error made during the preparation of the summary.

#### Did you know?

The environmental petitions process that the commissioner of the Environment and Sustainable Development administers allows Canadians to present their concerns about environmental ssues formally to federal ministers and to obtain a response. See Chapter 5. Env. ronmental Petitions, for additional details about the process

#### 1.29 Performance information systems still being developed.

Since 1995, the federal government has been committed to managing for results; this means that ministers, senior officials, and managers make decisions based on what results programs have been achieving and at what cost. Developing meaningful performance measures and performance expectations can be one of the most difficult aspects of managing for results, and it can take time. In the case of climate change, for many programs it is difficult to measure and link program activities to results that can take years to appear.

- 1.30 In 2005, the federal government announced a comprehensive review of climate change programs to determine whether programs should be maintained, expanded, or terminated, based on such criteria as the programs' impact on competitiveness, partnership with other stakeholders, innovation, and cost-effectiveness. By October 2005, the Treasury Board Secretariat had completed its review against these criteria.
- 1.31 Considerable work remains to complete, update, and maintain the system for monitoring and reporting on climate change spending and performance. While the Treasury Board Secretariat has undertaken initiatives in these areas, central agencies have not assigned final responsibility for these processes.
- 1.32 Promised public reports not issued. In the Climate Change Plan for Canada (2002), the federal government committed to publishing reports every two years outlining the plan's successes and describing its evolution as it is adjusted to meet new challenges. The government's response to environmental petition 63 reiterated this commitment.
- 1.33 There has been, however, no comprehensive report since June 2003 about the overall results of the government's climate change efforts. The federal government's climate change Web site has been a source of general information. Natural Resources Canada prepares regular reports about energy use, and a number of departments refer to climate change activities in their annual performance reports to Parliament. The 2005 plan states, "We will report annually to Canadians on our progress, beginning in 2008." The federal government has not yet assigned responsibility for preparing this report. At present, there is no overall reporting of expenditures or results.
- 1.34 Recommendation. Environment Canada, in collaboration with the Privy Council Office and the Treasury Board Secretariat, should ensure the development and implementation of effective governance and accountability for the climate change issue within the federal

government. Key roles and responsibilities should be defined, assigned, and publicly reported; and which departments participate and how they do so should be specified. Appropriate funding, development, and implementation of mechanisms need to be established for

- · overall decision making,
- ongoing interdepartmental co-ordination,
- monitoring and reporting to Parliament and to Canadians about past and future financial and non-financial performance related to climate change activities, and
- evaluation and adjustment of policies and programs for climate change.

The government's response. It is correctly pointed out in this chapter that a complex issue that implicates a number of federal organizations such as climate change requires effective horizontal management, including appropriate governance and accountability mechanisms. The government agrees that roles and responsibilities should be clearly defined, processes to support decision-making and co-ordination established, results reported to Parliament and Canadians in a transparent manner, and policies and programs subjected to regular evaluation and adjustment.

In its response to Chapter 4 of the November 2005 Report of the Auditor General of Canada, the government made specific note of the central agency function in respect of horizontal initiatives. That function is to play a facilitating role in the launch of such initiatives in order to ensure that they are positioned effectively within government priorities and are established in such a way as to ensure that an integrated approach is developed. The Privy Council Office ensures that appropriate departments are involved in the Cabinet processes, that departmental leadership roles are identified, and that, where necessary, horizontal governance structures are put in place.

At the same time, the Privy Council Office and other central agencies, such as the Treasury Board Secretariat, must respect the leadership and accountability of departments to implement initiatives, such as climate change, in a manner that is consistent with their areas of responsibility and respects Treasury Board management practices. As is acknowledged in this chapter, it is the responsibility of departments and agencies to manage such initiatives.

The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective

measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development on governance and accountability will be considered in developing the agenda.

# The Amberal approach in the transportation sector

## Key measures examined do not adequately address emissions in the transportation sector

- 1.35 The transportation sector alone accounts for about 25 percent of greenhouse gas emissions in Canada (Exhibit 1.6). It plays a vital role in the lives of Canadians and the economy, by enabling the movement of people and goods and the provision of services.
- 1.36 Reducing emissions in the transportation sector is a complex challenge that needs to address not only emissions from the ever-increasing number of cars and trucks on the road but also from air, sea, and rail transportation (Exhibit 1.7). Doing so will require long-term, transformative changes in vehicle technology, fuel mix, and infrastructure, as well as in individual Canadians' behaviours and transportation choices.
- 1.37 In its 2000 plan, the federal government proposed several measures to reduce emissions from transportation by an initial target of 9 million tonnes. The 2002 plan built on this foundation, with additional measures and a revised sectoral target of 21 million tonnes. By contrast, the 2005 plan contained only one well-defined measure for transportation—a memorandum of understanding with the automotive industry.
- 1.38 We are concerned about the lack of a federal strategy for reducing emissions from transportation, given the current level of emissions and regulatory framework available to the federal government in this sector. Responsibility for transportation is shared among three federal departments (Transport Canada, Environment Canada, and Natural Resources Canada). Thus, a federal strategy is critical to ensuring a co-ordinated effort.
- 1.39 Policy decisions also need to be based upon sound analysis. Under the National Climate Change Process, one expert group was assigned to look at achieving emission reductions from transportation. The group's work culminated in *Transportation and Climate Change:* Options for Action (1999). This environmental, social, and economic analysis formed the basis for the targets and measures in Action Plan 2000, the 2002 plan, and supported the 2005 automotive industry agreement.

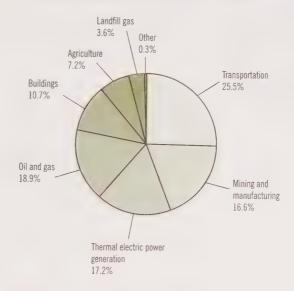


Exhibit 1.6 Canada's greenhouse gas emission sources in 2004

Source: Adapted from Environment Canada's National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada (April 2006)

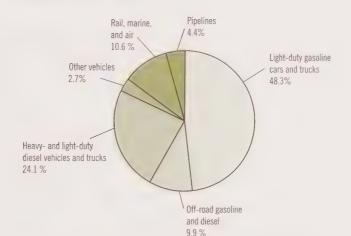


Exhibit 1.7 Light-duty gasoline cars and trucks made up almost half of the emissions from the transportation sector in 2004

Source: Adapted from Environment Canada's National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada (April 2006)

1.40 2005 automotive industry agreement falls short in a few key areas. In April 2005, the Canadian Vehicle Manufacturers' Association and the Association of International Automobile Manufacturers of Canada signed a memorandum of understanding with Natural Resources Canada, on behalf of the Government of Canada, committing to reduce greenhouse gas emissions from



Light-duty vehicles are a key source of greenhouse gas emissions in Canada.

Photo: Bastiaan Kalt

light-duty vehicles by 5.3 million tonnes by 2010. This objective is to be achieved largely by improving fuel efficiency and introducing advanced emission technologies, advanced diesel technology, alternative fuel vehicles, hybrids, and other technologies to reduce greenhouse gas emissions.

- 1.41 In the Commissioner's 1999 Report, Chapter 4, Managing the Risks of Toxic Substances: Obstacles to Progress, we outlined the key criteria for a successful voluntary agreement signed with a third party. Given that the government has used voluntary agreements with industry to address major environmental and health concerns, it is important that these agreements include, among other elements, effective objectives and measures and that they work transparently. This list of criteria was subsequently incorporated into Environment Canada's 2001 Policy Framework for Environmental Performance Agreements.
- 1.42 The agreement between Natural Resources Canada and the automotive industry does meet many of the criteria for voluntary agreements, for example, in clearly identifying an environmental objective and clear targets. However, one key area of concern is the lack of credible independent verification of the model, data, and results that will be used to determine progress (see Exhibit 1.8).
- 1.43 Although the agreement is only in effect until 2010, the Department has indicated that any new technologies that are placed on the market as a result of the agreement are expected to lead to growing reductions in greenhouse gas emissions after 2010 as new vehicles replace older ones. The Department claims that reductions will grow to 11.2 million tonnes by 2015. However, as Exhibit 1.9 shows, the agreement may only reduce the rate at which emissions from light-duty vehicles continue to increase. In addition, the exhibit highlights a discrepancy between the data used by Natural Resources Canada and Environment Canada's national inventory report, which Natural Resources Canada has not yet resolved.
- 1.44 Recommendation. Natural Resources Canada should ensure that the model, data, and results from the 2005 memorandum of understanding with the automotive industry are independently verified and that the results of the verification are reported publicly.

Natural Resources Canada's response. Natural Resources Canada agrees with the recommendation. The Department has initiated discussions with the vehicle industry on independent verification of the data, model, and results from the accounting model used to

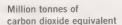
monitor the memorandum of understanding with the auto industry before the first report on interim goals for the 2007 model year. The intention would be to ensure that the results of that verification would be available to the public. In addition, the department and industry have already released a progress report that is supplemental to the requirements of the memorandum of understanding.

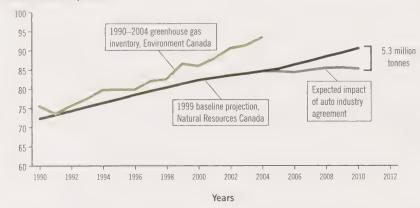
Exhibit 1.8 Assessment of the 2005 automotive industry agreement against criteria for voluntary agreements

Criteria for voluntary agreements (as outlined in Chapter 4 of the Commissioner's 1999 Report)	Assessment of the 2005 agreement
Clearly identified environmental objective(s)	There is a clear environmental objective—the reduction of greenhouse gas emissions by light-duty vehicles.
Baseline levels that exist at the beginning of the agreement	The 2010 business-as-usual emissions* baseline projection upon which the agreement was negotiated with industry did not take into account all of the updated information available at the time of negotiations in 2004–05. Using Canada's Emissions Outlook Update: 1999, Natural Resources Canada had estimated that projected greenhouse gas emissions from light-duty gasoline vehicles would be 90.5 million tonnes in 2010. However, Environment Canada's National Inventory Report 1990–2002 noted that 2002 emissions from that sub-sector were already over 90 million tonnes.
Clear targets with timelines	There is a clear overall target for 2010, along with intermediate targets for 2007, 2008, and 2009.
Meaningful performance measures	A complex model has been developed for measuring progress against the targets.
Clearly defined roles and responsibilities	Roles and responsibilities of Natural Resources Canada and the automotive industry are defined by the agreement.
Consequences for failing to meet targets and rewards and recognition for achieving them	The agreement precludes penalties for companies, or for the industry as a whole; there is only a general statement that "the Government of Canada has the right to regulate and will do so if it deems necessary." However, Natural Resources Canada has stated that fewer reductions would be possible under a regulated approach than through a voluntary agreement.
Periodic public reporting requirements	There is a commitment to annual performance reporting. The Department has indicated that periodic progress reports and updates will be made public.
Provision for regular credible verification	The model, data, and results used to determine progress will not be independently verified prior to the release of any reports.
Regular evaluation of initiative to determine progress and consider whether corrective action is necessary	Natural Resources Canada has indicated that an interdepartmental Director General Committee is in place to guide government evaluation of progress and to identify any necessary corrective action.

<sup>\*</sup> The bolded text is defined in the section on large industrial emitters (see page 21).

Exhibit 1.9 The automotive industry agreement may only slow the rate of growth in greenhouse gas emissions from light-duty gasoline vehicles





The auto industry agreement may only slow the rate of emissions growth for light-duty gasoline vehicles (cars and trucks). In addition, there is a discrepancy between Natural Resources Canada's projections used for the agreement and Environment Canada's national inventory report.

Sources: Adapted from Environment Canada's National Inventory Report 1990-2004: Greenhouse Gas Sources and Sinks in Canada (April 2006) and Canada's Emissions Outlook Update: 1999 by Natural Resources Canada

- Recommendation. In any future voluntary agreements, Natural Resources Canada should establish requirements similar to those found in Environment Canada's 2001 Policy Framework for Environmental Performance Agreements. While the automotive industry agreement addresses many of these requirements, at a minimum, such future agreements should include
  - senior-level commitment by involved parties,
  - clearly identified environmental objectives,
  - baseline levels measured at the beginning of the agreement,
  - clear targets with timelines,
  - meaningful performance measures,
  - clearly defined roles and responsibilities for all parties,
  - consequences for failing to meet targets and incentives for achieving them,
  - periodic public reporting requirements,
  - · provision for regular credible verification, and
  - regular evaluation of the agreement to determine progress and options for implementing corrective action, where necessary.

Natural Resources Canada's response. Natural Resources Canada recognizes the requirements listed in Exhibit 1.8 of the present report and identified in Environment Canada's 2001 *Policy Framework for Environmental Performance Agreements*. The Department will immediately investigate options for adopting a similar policy framework for future voluntary agreements in the auto sector and for other sectors.

# Addressing greenhouse gas emissions from large industrial emitters



Large industrial emitters, like thermal power generation, are a key source of greenhouse gas emissions in Canada.

Photo: Bastiaan Kalt

Fixed-process emissions—Greenhouse gas emissions that are driven purely by chemical reactions, not by fuel combustion, for example, the electrolytic processes used by smelters to produce aluminium emit carbon dioxide

**Business-as-usual emissions**—Greenhouse gas emissions that would occur in the absence of any specific requirements to reduce emissions.

#### Approach to address emissions from large industry promises only limited results

1.46 Industry makes an important contribution to Canada's economic base. The oil and gas, thermal electricity, and mining and manufacturing sectors together account for around 53 percent of Canada's greenhouse gas emissions (Exhibit 1.6). Action Plan 2000 contained measures to target these major industrial sectors and others. The 2002 plan then grouped the three main industrial sectors into an approach for large industrial emitters. The development of an approach to reduce emissions from these sectors, which came to be called the Large Final Emitter System, was continued, with some revisions, in the 2005 plan. The approximately 700 companies that constitute the largest industrial emitters from these three sectors produce a significant portion of the emissions.

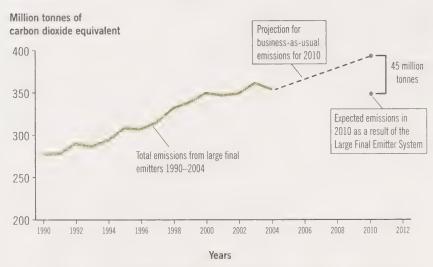
1.47 Emission reduction targets for large industry have decreased. Together, measures targeting large industry in the 2000 and 2002 federal plans were expected to achieve a greenhouse gas emissions reduction of about 95 million tonnes. Of this, 25 million tonnes were associated with measures in the 2000 plan. The remainder, 70 million tonnes, were associated with measures in the 2002 plan—of which 55 million tonnes was associated with what is now called the Large Final Emitter System. However, the plans did not specify how the target of 25 million tonnes was calculated. Nor was the government able to provide us with any analysis to support its selection of 55 million tonnes as a target.

1.48 Since 2002, the design of the Large Final Emitter System has been adjusted to reflect consultations with industry. The government stated that, as a result of those discussions, the target was reduced in response to concerns such as issues of competitiveness for companies with fixed-process emissions. Consequently, the 2005 plan lowered the overall greenhouse gas reductions expected of industry from 55 million tonnes to 45 million tonnes. However, the business-as-usual emissions baseline from which the reductions are calculated has been revised up by 6 million tonnes since 2002.

In addition, companies that are part of the Large Final Emitter System will be able to receive credit for reductions of up to 9 million tonnes by investing in the Greenhouse Gas Technology Investment Fund. These changes mean that the actual annual reductions by large final emitters in the 2008–12 period could be 30 million tonnes, about 65 million tonnes less than was expected through the 2002 plan, when the scope of initiatives targeting industry was broader.

1.49 Federal approach for large industrial emitters may only reduce the rate of emissions growth. Projections for large industrial emitters show that the proposed Large Final Emitter System, which aims to reduce the emissions intensity of industrial activities, would not lower absolute emissions below 1990 levels (Exhibit 1.10). A projected growth in production by industry, particularly in the oil and gas sector, will mean that this approach may only slow the rate at which emissions from many large industrial emitters continue to grow.

Exhibit 1.10 The Large Final Emitter System may only slow the rate of growth in greenhouse gas emissions by 2010



Source: Adapted from Environment Canada's *National Inventory Report 1990-2004: Greenhouse Gas Sources and Sinks in Canada* (April 2006) and data provided by Environment Canada's Greenhouse Gas Directorate

1.50 The stated objectives of the Large Final Emitter System are to reduce greenhouse gas emissions through a regulated, market-based approach, and to maintain industrial competitiveness by ensuring that no region or sector is unreasonably burdened. Companies covered by the system would be able to choose from the following options to comply with large final emitter regulation:

- Reduce their emissions by, for example, adopting more energy efficient technology
- Invest in the Greenhouse Gas Technology Investment Fund
- Buy emission reductions credits from other large industrial emitters or from projects that offset emissions, as part of a domestic emissions trading scheme
- Purchase foreign emission reduction credits through mechanisms under the Kyoto Protocol

The federal government is also developing a mechanism that will ensure that companies can achieve compliance at a cost of no more than \$15 per tonne.

- 1.51 Further analysis needed. Action Plan 2000 contained emission reduction measures for industry based on economic, social, and environmental analyses undertaken through the National Climate Change Process in 1998 and 1999. Supplemental economic analyses led the federal government to incorporate emissions trading in the 2002 plan, as a tool to help large industrial emitters reduce their greenhouse gas emissions. This continues in the 2005 plan as a key feature of the Large Final Emitter System. However, analysis of the approach remains incomplete because some of the components of the approach, such as sector specific regulation, or the manner by which the \$15 price assurance mechanism will be implemented, have not yet been finalized by Environment Canada.
- 1.52 Environment Canada faces the challenge of completing the necessary elements of the Large Final Emitter System before it begins operation on 1 January 2008. Environment Canada, with the assistance of other stakeholders, has shown progress in developing and phasing in mechanisms for the mandatory reporting of facility-based greenhouse gas emissions. This is critical to the success of the Large Final Emitter System. However, public reporting was delayed by about one year. Critical infrastructure such as the regulation that will enforce the Large Final Emitter System and a registry to track emission credits has not yet been completed. Furthermore, the costs for administering the Large Final Emitter System are currently unknown.
- 1.53 Need to address potential risks in the Large Final Emitter System. The Large Final Emitter System's multiple objectives and its various options for compliance have resulted in a very complex design. Key risks of the proposed approach still need to be addressed by Environment Canada (see Exhibit 1.11).

 ${\it Exhibit}~1.11~{\it Key risks of the proposed Large Final Emitter}~{\it System}$ 

Key risks	Explanation
Uncertainties with the 2010 projection for business-as-usual emissions	The 2010 projection for business-as-usual emissions is not only the basis for reduction targets, but is also a key starting point for assumptions behind the policy choices made in the 2002 and 2005 plans. The 2010 business-as-usual projection has, however, come to be seen by many as outdated and problematic. Also, no public document has been made available that has separated out the 2010 business-as-usual figures for each of the large industrial emitter sectors. Without a reliable baseline showing what the business-as-usual emissions would be, there is a risk that the level of expected reductions may not be realized or may be inaccurate, and that the cost and effort to achieve the expected reductions may be greater than anticipated.
Uncertain reductions from the Greenhouse Gas Technology Investment Fund	Up to 9 million tonnes of the total target of 45 million tonnes can be addressed through companies' investments in the Greenhouse Gas Technology Investment Fund. Financial contributions are expected to support the development and deployment of innovative domestic technologies that could reduce greenhouse gas emissions. However, investments in the Fund are not expected to generate emission reductions within the system's 2008–12 time frame. Thus, industry is essentially borrowing credit from the future for its compliance in the 2008–12 period. There is also a risk that companies may receive credit for research and development they already have planned, making it difficult for the government to verify what is new, additional research and development for greenhouse gas reductions.
Potential legal challenges to the current approach	The System proposes that new industrial facilities require emission intensity targets equivalent to the emission standard that can be achieved by applying the best available technology in a manner that is economically achievable. However, it is uncertain whether giving different targets for new facilities, compared to other targets for existing facilities, is allowed under legislation. Additionally, for the Large Final Emitter System to work, it was necessary for the federal government to add greenhouse gases to the toxic substances listed under Schedule I of the <i>Canadian Environmental Protection Act</i> , 1999. Industry has expressed opposition to declaring greenhouse gases "toxic" because of concern that putting those emissions in the same category as other substances like lead, mercury, and PCBs may have implications outside the system, such as how investors may perceive these industries. Legal challenges could undermine the Large Final Emitter System altogether.
Questions about transparency in reporting	Regulation will establish the requirements for reporting by large industrial emitters, with legal penalties for non-compliance. Considering the need to ensure industry's progress against emission intensity targets and the need for accountability for achieving results, transparent reporting and verification are integral to the system. However, issues of confidentiality and the public reporting of industry data remain unresolved. In the absence of detailed and transparent information, it will be difficult for the public to verify whether real emission reductions have occurred and what progress large industrial emitters have made against their targets.
Potential federal/ provincial/territorial harmonization issues	The Large Final Emitter System will allow interested provinces and territories to sign equivalency agreements with the federal government to enforce industry compliance under provincial regulation. In such cases, harmonization between the federal and provincial legislation will require agreement on key definitions, reporting obligations, approaches to verification of data, and penalty structures for non-compliance. If these regulatory elements are not harmonized, then there is a risk that the burden on the federal government of implementing the large final emitter regulation will be greater than anticipated, and that industry will face multiple compliance obligations and greater administrative costs.

Real emission reductions—Reducing or avoiding actual emissions that would have occurred, resulting from a specific and identifiable action

**Measurable emission reductions**—Ensuring that the actual level of greenhouse gas emissions associated with an action can be quantified.

Verifiable emission reductions—Ensuring that the methodology used to calculate emission reductions is transparent and replicable, and the appropriate data required to verify or audit the calculations is available and can be confirmed.

Transparency—The open conduct of government activities, so that parliamentarians and the public can monitor and challenge the government's performance to ensure it is consistent with policy intentions, fairness, propriety, and good stewardship. Knowing that their actions and decisions are visible encourages ministers and managers of public programs to behave in ways that can withstand public scrutiny.

1.54 Recommendation. Environment Canada should ensure that emissions reductions achieved by the Large Final Emitter System are real, measurable, and verifiable, and that the method used to calculate them is transparent to parliamentarians and the public. Environment Canada should also assess on an ongoing basis, and in a transparent and timely manner, the uncertainties and risks associated with the system and implement actions to address them.

Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.

# Conclusion

- 1.55 It is essential that the federal government apply the basics of good management—governance and accountability—in its leadership of climate change. This means, as a minimum, that the following are done:
  - Those involved clearly understand and agree to their roles and responsibilities
  - There is an overall implementation plan, which sets out concrete, results-based targets and timetables for both the short and long term
  - There is a results-based monitoring system in place to assess progress
  - Adjustments are made as required to achieve the targets
  - Overall performance information is tabled in Parliament to assist it in its oversight role

1.56 These essentials were previously raised in the Commissioner's 1998 Report, Chapter 3, Responding to Climate Change—Time to Rethink Canada's Implementation Strategy.

Departments responsible for climate change activities have made a considerable effort to develop a management and accountability framework. However, in summary, the government has yet to create an effective governance structure for managing its climate change activities. In addition, there has been no consolidated reporting of performance results since 2003, and no additional reports are expected until 2008.

- 1.57 Despite billions of dollars in announced funding, there is no government-wide consolidated monitoring and reporting of climate change expenditures. The Treasury Board Secretariat is currently developing a system for capturing spending and performance information, but it is not yet fully operational; responsibility for maintaining it has not been assigned. The Secretariat was unable to provide documentation to fully substantiate the amounts reported in its 2005 response to a parliamentarian's question relating to federal climate change expenditures. Given the system available, we were also unable to accurately replicate the expenditure information. Until the current system is improved, it is not sufficiently accurate for management and reporting purposes.
- 1.58 Canada's three federal climate change plans in 2000, 2002, and 2005 addressed various aspects of the Canadian economy. The emissions reduction approach in two areas, light-duty gasoline vehicles and large industry, may only slow the rate of increase of greenhouse gas emissions. This is disconcerting since the transportation and industry sectors account for approximately 78 percent of Canada's greenhouse gas emissions. Additionally, in some cases, analysis necessary to support some targets and policy tools was insufficient.
- 1.59 In 2005, the federal government signed an agreement with the automotive sector to reduce greenhouse gas emissions from light-duty vehicles by 5.3 million tonnes. This agreement meets many of the key criteria for a successful voluntary agreement signed with a third party, such as providing measurable targets with timelines. However, we are concerned about the lack of credible independent verification of the model, data, and results used to determine progress.
- 1.60 The government's proposed approach to addressing Canada's large industrial emitters is complex. While the government has made progress in mandatory facility reporting, key risks, including the assurance of actual reductions in greenhouse gas emissions and transparency in reporting, remain unresolved.

# Emissions trading as a tool

Government use of emissions trading to reduce greenhouse gas emissions is a new tool with challenges to overcome

1.61 Emissions trading is among the compliance options available to companies covered by Canada's proposed Large Final Emitter System. Under this system, companies would have to reduce their greenhouse gas emissions to a level specified by regulation. Companies would receive one credit for every tonne of reduction they achieve below the

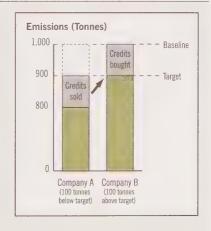
required level. They could sell these credits to other companies, who could apply the credits to their own required reductions.

- 1.62 While emissions trading does not itself reduce emissions, it can make achieving emission reductions more cost effective, by giving companies the flexibility to choose the lowest cost option to meet their reduction requirements—for example, by investing in improvements to their own facilities to reduce emissions, or by buying credits from other companies. The example of an emissions trade in Exhibit 1.12 shows that this flexibility provides a financial incentive for some companies to develop and adopt new sustainable technology.
- **1.63** The potential benefits of emissions trading have been demonstrated by its application in other jurisdictions for a variety of air pollutants. For example, in 1990 the United States introduced a trading system to control the emission of sulphur dioxide, which causes

#### Exhibit 1.12 How does emissions trading work?

Two companies, A and B, each produce 1,000 tonnes of emissions per year. A new government regulation reduces the allowable emissions for a company to 900 tonnes per year. Each company is given 900 credits, one per tonne of emissions allowed by regulation. Compliance options include investing in improvements to their own facilities to reduce emissions or buying credits from other companies.

The cost of compliance is different for every company. Company A has old equipment scheduled for replacement. To meet the regulation, it invests \$1,600 in new equipment and reduces its emissions to 800 tonnes per year.



Company B has new equipment that would cost \$5,000 to replace. It continues to use its existing equipment and its emissions remain at 1,000 tonnes per year. As Company B holds only 900 credits, it is not in compliance with the new regulation. To balance its emissions with the credits it holds, Company B purchases the 100 excess credits of Company A at a cost of \$10 per tonne. In total, Company B only pays \$1,000 for compliance. Company A receives money from Company B that helps it to pay for the cost of its new equipment.

Without emissions trading, the net compliance cost for both companies would have been \$6,600. With emissions trading, the net compliance cost was only \$1,600. Thus emissions trading reduced the overall compliance cost and achieved the environmental target.

Real world costs, and thus potential real world savings, would likely be in the millions of dollars.

Source: Adapted from United Nations Environment Programme's A Guide to Emissions Trading (2002), Pollution Probe's Primer on Emissions Trading (2003), and other sources

acid rain. By helping companies reduce their emissions, this system has contributed to the recovery of lakes and streams affected by acid rain. This emission trading system has several features that make it work effectively:

- an absolute target, which restricts total emissions;
- tradeable credits, which create an economic incentive for companies to exceed their target;
- strict rules for monitoring and reporting emissions;
- public access on the Internet to data on emissions and compliance; and
- financial penalties, which are large enough to encourage compliance.
- 1.64 Several other countries, and even some private companies, are experimenting with emissions trading to lower the cost of reducing their greenhouse gas emissions. In 2002, the United Kingdom launched an economy-wide domestic trading system for greenhouse gas emissions. In 2005, the European Union launched a trading system involving 25 countries.
- 1.65 In spite of its advantages, emissions trading represents a significant learning challenge. It is a relatively new policy tool, and Canadian expertise in this area is limited. Further, many emissions trading systems are still experimental and use structures, rules, and terminology that can vary from system to system.
- **1.66** Governments have yet to resolve a number of difficulties in using emissions trading as a policy tool. For example, emissions trading requires an initial baseline against which to measure subsequent reductions. This requires detailed information about participating entities' recent and projected emissions—information that is not always readily available. Other difficulties include how to
  - prevent companies from claiming credits for greenhouse gas emissions for reductions that were already planned;
  - ensure that each tonne of emissions reduced is counted only once;
  - ensure that credits issued for carbon storage are not reversed, for example, by the release of carbon stored in forests through harvesting or forest fires;
  - prevent companies from shifting emissions from one geographic location to another;

- give credit for early action to companies that have voluntarily reduced their emissions; and
- estimate and minimize transaction fees and administrative costs.

These difficulties do not apply to all emission trading systems. While they have not prevented governments from developing trading systems, they are the subject of ongoing discussion and negotiation.

## Canada faces challenges to the success of its proposed emissions trading system

- 1.67 Canada is developing a domestic system for trading greenhouse gas emissions. The 2005 plan expected to use emissions trading to meet close to half of Canada's Kyoto gap. The proposed approach had three complimentary components:
  - Large Final Emitter System—Emissions trading is among the options that companies would have to comply with regulation.
  - Offset System—A voluntary system in which projects that reduce or remove greenhouse gases would receive one offset credit for every tonne of verified reduction in emissions. This system would be open to any individual or organization in Canada. For example, a landfill operator that installs a methane collection system could apply to Environment Canada to have credits issued for the methane reduced. The credits could be sold to companies to help them meet their targets, and revenue from their sale would be an incentive to undertake such projects. Other eligible areas for offset projects may include forestry, agriculture, renewable energy, and energy efficiency.
  - Climate Fund—A tool the federal government could use to purchase both domestic and international emission reduction credits. While designed to help Canada close its Kyoto gap, the Fund would also provide a financial incentive that encourages Canadians to undertake projects that produce offset credits.
- **1.68** Environment Canada is currently responsible for developing and implementing all three components. In 2005, the federal government established a new agency under Environment Canada, the Canada Emission Reduction Incentives Agency, to manage the Climate Fund.
- 1.69 Price cap may create a financial liability. In 2002, the federal government promised industry that its cost of compliance with the Large Final Emitter System would not exceed \$15 per tonne from 2008 to 2012. While this price cap would reduce the risk to large industrial emitters if credits should trade on the international market



Agriculture is a potential source of offset credits.



at higher than \$15 per tonne, it leaves the federal government to make up the price difference. For example, assuming the Government of Canada pays the difference and if credits were to trade for \$20 per tonne, the federal government would pay \$5 for every credit purchased. In this example, the Government of Canada would incur a potential liability of as much as \$900 million over a period of five years.

1.70 The federal government's analysis of the price cap is insufficient to give Parliament any assurance about the size of the total potential liability; it could range from zero to more than \$1 billion. Environment Canada recognizes this risk and is developing options for implementing the price cap that would minimize the potential liability. However, it is not yet certain what the actual liability will be, as it will depend on several variables, including the option selected to implement the price cap and the compliance behaviour of large final emitters. Future prices of international emission credits are also difficult to predict, as emission trading systems frequently experience large price fluctuations during start-up. For example, since it began in January 2005, credit prices in the European Union's greenhouse gas emission trading system have ranged from less than 10 Euros to more than 30 Euros.

# Canada's system is complex, and its progress is slow

- 1.71 Distinctive features of Canada's proposed emissions trading system, such as the emission intensity target applied to the Large Final Emitter System and its numerous options for compliance, may not only add complexity but may also limit its effectiveness. Unlike the United States' sulphur dioxide trading system, where companies are completely liable for achieving absolute reductions, liability for not achieving the Large Final Emitter System's emission intensity target would rest mainly with the federal government. Environment Canada will need to verify that the emission reductions claimed by industry and developers of offset projects have been achieved.
- 1.72 Canada's emissions trading system would likely have a limited number of credits available for trading, which may limit its effectiveness. Canada could expand its trading market by linking to the greenhouse gas emission trading systems of other countries, which would increase opportunities for Canadian companies to find cost-effective reductions. A linked system could also allow Canadian companies with installations in other countries to maximize their business opportunities by taking advantage of several trading systems. However, the distinctive features of Canada's system—for example, its emission intensity target, price cap, and permitted use of offset

credits—may limit its ability to link to other major trading systems that do not share these features, such as that of the European Union.

1.73 Progress has been slow in implementing the domestic emissions trading system. The 2002 plan anticipated that the system would be developed in 2003–04 and be implemented as soon as possible thereafter. However, the Large Final Emitter System is not expected to be in place until 1 January 2008. Complex negotiations with industry and provinces on the design of the Large Final Emitter System and a lack of timely decision making by the federal government have delayed progress. Many critical elements of the system are still being developed, and many risks remain unaddressed. While some companies have undertaken voluntary reductions, there will be no federal requirements for industry to reduce emissions until the system begins.

1.74 The Offset System was expected to be introduced in early 2006, yet many critical elements are still being developed, most notably a sound communications strategy. To date, no guidance has been published to help interested Canadians prepare to use the Offset System effectively. Other infrastructure still being developed includes the electronic registry that will track offset projects. Given that new projects can take a number of years to realize emission reductions, under the current proposal, it is critical to the success of Canada's emissions trading system that the Offset System begin to operate as soon as possible.

1.75 The Climate Fund was declared "open for business" in November 2005. However, it has not yet had funding approved for any activity other than initial operations. By the end of this audit, Environment Canada had not yet completed public consultations on the Canada Emission Reduction Incentives Agency, and the Agency had not yet tabled its corporate business plan and proposed credit purchase strategy or purchased its first credit.

### Other risks need to be managed

1.76 Canada could use international credits to meet its obligations. Emissions trading is also among the options that countries have for meeting their Kyoto targets. Countries that cannot meet their targets through domestic measures alone can purchase credits internationally from mechanisms established under the Kyoto Protocol. (Please consult The Commissioner's Perspective, which includes a section called Climate Change—An Overview, for additional details.)



Windpower is a potential source of offset credits

Photo: Natural Resources Canada

# Did you know?

in spring 2006, Unite became host to the first

projects to involve a Canadian company. The projects supported by this company were designed to reduce greenhouse gas emissions igh the capture and combustion of methane from swine manure treatment. To date, these projects have been issued more than 980,000 credits for certified emission reductions.

- 1.77 In 2005, the federal government estimated that the gap between Canada's Kyoto target and its emissions during the commitment period could exceed 270 million tonnes. To help close this gap, the 2005 plan expected the Climate Fund to purchase between 75 and 115 million tonnes of domestic offset credits and international Kyoto credits per year from 2008 to 2012, at a total cost of \$4 to \$5 billion. While the Fund would give priority to domestic credits, Environment Canada estimates the potential reductions from the Offset System to be around 58 million tonnes per year (around 21 percent of the estimated Kyoto gap). Thus, if Canada wants to meet its Kyoto target, it may need to become an important participant in the international market.
- 1.78 Investing in Kyoto credits from international projects can have economic and environmental benefits. These mechanisms operate on the principle that reductions in greenhouse gas emissions will have the same impact on the atmosphere regardless of where in the world they are achieved. Project-based Kyoto mechanisms, such as the Clean Development Mechanism and Joint Implementation, can result in real emission reductions and provide opportunities for sustainable development in developed and developing countries. However, the supply of such credits may be limited relative to demand.
- 1.79 By contrast, there may be a large quantity of "surplus" emission credits for sale because of economic decline in Eastern Europe since 1990. While these credits can be applied against targets under the Kyoto Protocol, the use of these credits has been criticized as they do not represent sustainable emission reductions. In the 2005 plan, the federal government acknowledged this and specified that it would recognize only "green" credits, requiring that all proceeds from the sale of surplus credits be reinvested in emission reduction activities.
- 1.80 At present, Canada is not in a position to ensure that this requirement is met. The Canada Emission Reduction Incentives Agency has yet to develop an effective strategy for international credit purchases. Nor has the federal government developed the capacity it requires to identify eligible reduction activities, supervise their implementation, or ensure proper transparency and accountability in the use of funds. In addition, the price at which countries, such as Russia and the Ukraine, would be willing to sell surplus credits is unknown.
- 1.81 In 2006, the federal government stated that it would give priority to domestic measures rather than investments in international credits.

## Time to pilot emissions trading is running out

- **1.82** "Piloting" emissions trading systems—an international best practice. Experience in other jurisdictions has shown that early piloting can benefit the effectiveness of emission trading systems by
  - testing critical mechanisms, such as protocols for monitoring, reporting, and verification to identify and adjust potential problems;
  - allowing government and industry to gain experience using this
    policy tool before the government starts to assess compliance; and
  - providing an opportunity for market services, such as emission brokers, verifiers, and other consultants, to develop in support of the system.
- 1.83 Piloting is valuable because emissions trading systems are unlike other kinds of policy tools. Implementing an emissions trading system establishes a market for emission credits. Companies may invest billions of dollars in this market, based on the system's rules. Any major alterations to the system could cause companies to lose confidence in the market and stop investing. Thus, if an emissions trading system is to be effective, once implemented, it is only possible to make minor adjustments to the system, not major alterations.
- 1.84 Little time left for Canada to test its system. According to Environment Canada's timelines, there is now less than two years before the full start of the proposed emissions trading system. Although analysis of the trading system has been extensive, it cannot replace on-the-ground testing. While we do not discourage innovation in developing and implementing new policy tools, we are concerned that the short time remaining will not permit Canada to test its complex emission trading system before implementation.
- 1.85 Environment Canada needs to better understand the significance of the known risks and potential liabilities associated with the proposed emissions trading system. These risks and liabilities, and any new concerns that may arise, will not be known with certainty until the final system is in place.
- **1.86** Recommendation. Environment Canada will need to put mechanisms in place to ensure that the first phase of Canada's emissions trading system, including the Large Final Emitter System, works effectively. To ensure that emissions reductions are real, measurable, and verifiable, Environment Canada should

- commit sufficient resources to develop, implement, and evaluate the system;
- test and adjust monitoring, reporting, and verification systems to ensure that information reported is complete, accurate, and useful;
- ensure transparency by publishing key data, including the business-as-usual projections, that parliamentarians and the public require to assess progress against targets;
- develop a good communication strategy to fully inform all players about plans to introduce trading and to guide the players on how to participate effectively; and
- engage an independent, expert advisory panel to monitor progress on system design and implementation—the panel should report annually and publicly.

At the end of the first phase, Environment Canada should

- evaluate the systems to identify issues of concern in areas such as cost, results, and effectiveness;
- report its findings publicly;
- consult relevant players and experts about potential system adjustments; and
- adjust the emissions trading system and its components to address serious issues of concern.

Environment Canada's response. The Government of Canada is developing the agenda.

# Conclusion

1.87 Progress to date on putting in place a domestic greenhouse gas emissions trading system is slow. While we do not discourage innovation in the development and implementation of new policy tools, there are significant uncertainties that remain in the design of the proposed system. As a result, we are unable to conclude whether the system as proposed will be effective. Distinctive features, such as the \$15 price cap promised to industry, present potentially serious financial risks to the Canadian government that could range from zero to more than \$1 billion. These risks need to be carefully managed.

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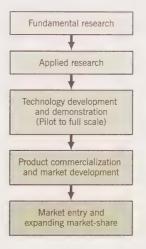
# Sustainable Development Technology Canada

# A significant tool in the government's efforts to reduce greenhouse gas emissions

1.88 In the innovation chain that brings new technologies from research to commercialization, two of the most critical stages are development and demonstration—where technologies leave the laboratory and are tested in practical applications (Exhibit 1.13). The federal government and others have identified that a lack of funding for development and demonstration has been a significant impediment to bringing new technologies onto the market—particularly sustainable development technologies, for which the market is still emerging.

#### Exhibit 1.13 Innovation chain

The innovation chain associated with technology development consists of the following stages:



Source: Adapted from SDTC documents

- 1.89 In 2001, the Government of Canada established Sustainable Development Technology Canada (SDTC) as a foundation to help fill the funding gap and foster the creation of sustainable development technologies in Canada. This mandate is set out in the legislation that established SDTC and in the agreements by which the government funds its operations. These funding agreements are signed by SDTC and the ministers of both Natural Resources Canada and Environment Canada—the sponsoring departments for this foundation.
- **1.90** SDTC's mission is to act as the primary catalyst in building a sustainable development infrastructure in Canada. To achieve this mission, it does the following:

- Awards funds to develop and demonstrate new sustainable development technologies
- Fosters and encourages collaboration and partnering among different organizations to strengthen Canadian capacity to develop and demonstrate sustainable development technologies
- Ensures timely diffusion of these technologies in relevant market sectors

SDTC is a not-for-profit corporation originally registered under the Canada Corporations Act, and now governed by the Canada Foundation for Sustainable Development Technology Act. SDTC management is responsible to a board of directors whose 15 members are from the public, private, and academic sectors in Canada. The Foundation is not an agent of Her Majesty and, therefore, cannot create obligations that the Crown may have to satisfy.

- 1.91 The federal government has awarded SDTC three grants worth a total of \$550 million to finance its activities, of which \$280 million is primarily directed at climate change technologies (Exhibit 1.14). As such, SDTC is a significant tool in the government's strategy for reducing greenhouse gas emissions through technological innovation.
- 1.92 We did not audit all aspects of SDTC, but focussed on decision making and management processes relevant to its climate change mandate. The audit of Sustainable Development Technology Canada focussed both on the federal government's relationship with SDTC, including its oversight of the funding agreements, and on how well SDTC was fulfilling its climate change mandate.

Exhibit 1.14 Federal funding received by Sustainable Development Technology Canada

Federal budget	Funding amount	Purpose	Date funding agreement signed 26 March 2001	
28 February 2000	\$100 million	climate change technologies (\$80 million) and clean air technologies (\$20 million)		
18 February 2003	\$250 million   climate change technologies (\$200 million) and clean air technologies (\$50 million)		31 March 2004	
23 March 2004	\$200 million	primarily clean soil and clean water technologies	31 March 2005	
Total	\$550 million			

Source: Adapted from federal budgets and funding agreements

# Government took reasonable steps to ensure alignment of Sustainable Development Technology Canada's climate change activities with federal efforts

- **1.93** We found that the steps taken by the federal government through its funding arrangements with SDTC resulted in the alignment of the Foundation's climate change activities with federal climate change programs. The Foundation is filling a specific niche or role within the innovation chain for new technologies.
- 1.94 In 1999, as part of the National Climate Change Process established by the federal Climate Change Action Fund, a stakeholder group identified a lack of funding for the early development stages of new technologies. Following the Budget 2000 announcement to fund this Foundation, an interdepartmental working group, consisting primarily of representatives from departments operating science and technology programs, mapped existing programs. The exercise confirmed the difficulty companies had in securing funding in the early stages of developing new technologies, including the period from prototype development to the full-scale demonstration stage. This became SDTC's niche area.
- 1.95 The interdepartmental working group was also involved in developing SDTC's first funding agreement. This helped minimize any duplication or overlap of mandates between the departments and SDTC. The existing funding agreement had to be re-opened for negotiation when additional funding was allocated, and a similar interdepartmental working group was re-established each time. This has enabled departments to voice any further concerns about potential areas of duplication or overlap.
- 1.96 We interviewed several senior government officials involved with SDTC at various stages of its existence. They said that SDTC's mandate has filled a need. During an independent third-party evaluation that SDTC commissioned, which was completed in 2005, many of the key stakeholders, government officials, representatives of the venture capital community, and successful and unsuccessful applicants interviewed also said that the Foundation was truly filling a funding gap. In the view of these groups, the gap reflected the venture capital community's unwillingness to assume the risks associated with development and demonstration projects.

# The government has taken reasonable steps to oversee Sustainable Development Technology Canada

**1.97** Because the government is funding SDTC and relying on it for a significant contribution to the federal climate change effort, the federal

government has a duty to ensure that Parliament is informed about SDTC's activities under its funding agreements and their results and to monitor SDTC's climate change activities. That responsibility falls to Natural Resources Canada and Environment Canada as SDTC's sponsoring departments.

- 1.98 Reporting to Parliament. Each year, the Foundation is required to provide the Minister of Natural Resources with an annual report, accompanied by a corporate plan summary and an annual report supplement that provides descriptions and performance information on each funded project. The Minister tables these documents in Parliament.
- 1.99 We noted that the annual reports and corporate plans provide information about the number of projects SDTC approved. The annual report supplement also includes information on funding it has committed to each project. Both sponsoring departments provide information to Parliament about SDTC in their report on plans and priorities and in their departmental performance report. They use information from SDTC and, except in one early case, have given Parliament timely information about SDTC. We note that once SDTC-funded projects start entering the marketplace (see paragraph 1.116), SDTC will need to provide more information, as specified in its current funding agreement, on the performance of these projects through its annual reports. In addition, the sponsoring departments will need to reflect this project performance information in their reports to Parliament.
- 1.100 Monitoring. We found that Natural Resources Canada and Environment Canada have worked co-operatively to monitor SDTC. Since 2003, SDTC has met periodically with departments that operate science and technology programs. The meetings are a further opportunity to discuss issues of common concern.
- 1.101 In accordance with a provision of the 2004 funding agreement, in February 2005, Natural Resources Canada, in consultation with Environment Canada, commissioned a compliance audit of selected terms and conditions of the first two funding agreements. That audit confirmed that SDTC had complied with those terms and conditions, with one minor exception that was subsequently corrected. In addition, the current funding agreement, which expires in June 2015, provides for two interim evaluations and a final evaluation (see paragraph 1.114). While each government oversight mechanism has an important role, care needs to be taken to ensure that these

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mechanisms do not create an undue burden or negatively impact SDTC's operations.

# Sustainable Development Technology Canada's strategic decisions have been consistent with its mandate

**1.102** While it is important for the federal government to maintain appropriate oversight of SDTC's climate change activities, it is also important that SDTC take appropriate actions toward fulfilling its climate change mandate.

1.103 In its first 7 rounds of funding, SDTC received almost 1,000 statements of interest. From this, it approved 79 projects although 5 were subsequently cancelled or terminated, leaving 74 active projects. By the end of our audit, 7 SDTC-funded projects had completed their development and demonstration activities, and some have begun to enter the market. Exhibit 1.15 highlights two of SDTC's approved projects.

#### Exhibit 1.15 Examples of Sustainable Development Technology Canada's approved projects

The Foundation's portfolio of approved climate change projects covers a wide range of Canada's primary economic sectors, including agriculture, oil and gas, forestry, transportation, and waste management.

For example, one project will demonstrate an "on-demand" reusable liquid foam insulation system that fills a cavity between two layers of clear plastic film in transparent structures such as greenhouses to reduce the amount of fossil fuels used for heating.

Another project involves technology that processes and transforms organic waste such as cattle manure into energy, fertilizer, and reusable water for irrigation, while reducing greenhouse gas emissions and other environmental impacts.



Manure from cattle



Manure is transformed into energy, fertilizer, and reusable water at this manure processing facility.

1.104 Given the timing of the third federal grant received by SDTC (Exhibit 1.14), all of the approved projects have been for either climate change or clean air technologies, with over three-quarters of the projects having both climate change and clean air benefits.

1.105 We looked at the extent to which SDTC's strategic decisions reflect its mandate, as set out in the Canada Foundation for Sustainable Development Technology Act and funding agreements. We found that decisions recorded in minutes of meetings of the board of directors and other committees were consistent with SDTC's mandate, as were the corporate plans and other documents we reviewed. They also complied in all significant respects with the terms of SDTC's legislation and its funding agreements with the government.

# Sustainable Development Technology Canada's processes for selecting and managing projects are satisfactory overall

1.106 We found that SDTC has in place a reasonable process for selecting projects that it believes have the potential to both succeed in the market and help achieve Canada's climate change goals. SDTC can commit funding to new projects up to at least 31 December 2010. SDTC can, where eligible projects warrant, disburse funds in each year up to 31 December 2012. The process provides for due diligence at four distinct decision points.

1.107 Applications for project funding are subjected to external expert review and challenge at each stage of the process that leads to selection and board approval of a project. Applicants are screened for capabilities in technology, marketing, and business, as well as for the project's potential environmental benefits.

1.108 Successful project proponents are required to contribute at least 25 percent of the eligible costs of their projects. SDTC cannot finance more than 50 percent of eligible project costs. Because SDTC's mission is to act as a catalyst in building a sustainable development technology infrastructure in Canada, every funded project must involve a consortium of partners who can invest in the project or provide expertise in such areas as research, product development, manufacturing, and distribution. While governments at the federal, provincial, or municipal level, or their entities can also be consortium members, with few exceptions, they cannot receive SDTC funding.

1.109 Of the 74 active projects from the first seven rounds of funding, we reviewed 30 of those with climate change benefits. We found that SDTC's approval and funding processes for these projects had generally complied with the requirements of the applicable funding

# Did you know?

For every \$1 that SDTC commits to a project, consortia members commit almost \$3. About 60 percent of the total project funding comes from the private sector.

agreements between SDTC and the government. We also noted that the extent and quality of documentation in the climate change project files was better in projects from recent funding rounds than in earlier rounds, when SDTC had fewer staff. Beginning around mid-2004, the Foundation's staff began to grow from about 10 to about 20 full-time employees, due to the increase in funding levels. The Foundation supplements its staff, whenever necessary, by hiring contractors for specialized services, including expert reviewers to help assess technologies and business plans.

1.110 Challenges of moving from an approved project to a signed contract. Once the Board approves projects, SDTC must complete its contractual due diligence process and negotiate a contract. During this time the project recipient, with the help or guidance of SDTC, needs to resolve issues such as developing a consortium, finalizing other financing, arranging ownership of intellectual property, budgeting, confirming work plans, and establishing milestones for the project.

1.111 In the first five funding rounds, 44 active projects were approved by October 2004, and 30 had signed contracts by January 2006 (Exhibit 1.16). No contracts had yet been signed for the 30 approved projects from funding rounds 6 and 7, which had been approved in June and October 2005 respectively. Exhibit 1.17 shows the committed, contracted, and disbursed funding for SDTC-approved projects.

1.112 SDTC officials regularly report to the board of directors on the status of approved projects, including the reasons for delays in getting a contract signed. The two main reasons are that the applicant has yet to formalize its consortium or obtain financing from its members. In a few cases, projects have been cancelled due to significant delays, releasing the non-disbursed committed funds for new projects.

1.113 We found that SDTC has taken several steps to reduce project delays that are within its control, including hiring additional staff and assigning a team of managers to bring the non-contracted projects to closure.

Sustainable Development Technology Canada has put in place a satisfactory process for measuring and reporting the results of its climate change activities

1.114 SDTC commissioned an independent evaluation that was completed in 2005, to lay the groundwork for the two interim evaluations and a final evaluation required by the current funding agreement with the government. These evaluations will assess whether the Foundation is meeting its purposes and objectives and, to the

Exhibit 1.16 Some contracts are signed more quickly than others

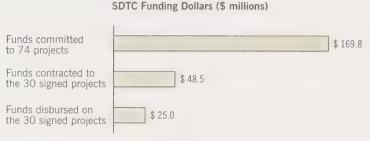
Of the thirty contracts as of January 2006, twenty-four were signed within one year of being approved by SDTC's Board.

Of the fourteen remaining active projects without a contract from the first five funding rounds,

- two were from round three (approved in October 2003),
- six were from round four (approved in May 2004), and
- six were from round five (approved in October 2004).

Source: Adapted from SDTC documentation

Exhibit 1.17 Sustainable Development Technology Canada has disbursed \$25 million in project funding as of January 2006



Source: Adapted from SDTC documentation

extent possible, whether adjustments to the program are necessary. The results of the interim and final evaluations are to be made public. As the basis for its performance and evaluation plan, SDTC has developed an evaluation logic model, which is integrated into its corporate plan and executive summary. The summary is available on its Web site.

1.115 We found that SDTC has collected data on both project and corporate performance to establish benchmarks for evaluating the performance of the funding allocation process, recipients of the funding, and the organization itself. Statistical data are available on funding by applicant, project size and technology, industry sector, and region. SDTC also has data showing the funding it supplied, as well as the funding supplied by industry, private financiers, and government agencies. In addition, it plans to compile data on each of its funded projects for three years after project completion. This will help it determine how accurately applicants have forecasted their technologies' share of the market.

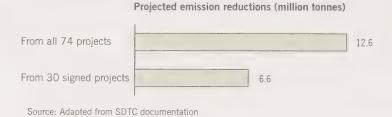
1.116 Because only seven SDTC-funded projects have recently completed their development and demonstration activities, it is too early to report on actual reductions in greenhouse gas emissions. Hence, the Foundation has so far reported results in terms of activities undertaken and outputs. Once the projects start entering the marketplace, SDTC will be better placed to assess and report more fully on the extent to which it has reached its goals.

1.117 Greater care is required in reporting projected reductions in greenhouse gas emissions. Although not required to report on projected reductions in greenhouse gas emissions, SDTC's 2002 Annual Report included an estimate of the projected reductions claimed by successful applicants for their projects. We noted in each subsequent annual report that SDTC has adjusted its reporting of these projections. The projections are based on applicants' calculations using a methodology prescribed by the Foundation, which is derived from emerging international standards. SDTC includes similar information in its corporate plans.

1.118 Beginning with its 2003 Annual Report, SDTC discounted each project's projected reductions by 90 percent to take into account market dynamics or uncertainty and the probability that some technologies or businesses may fail. However, as SDTC was unable to provide sufficient documentation to justify the discount rate, we were unable to confirm its appropriateness. Also, in communicating these projections, SDTC has not included a sufficiently explicit disclaimer so that parliamentarians and the public do not place undue reliance on them, given that the actual results may vary significantly from those projected.

1.119 These reported projections cover a short period of time (up to 2010, the mid-point of the Kyoto Protocol commitment period). They can, therefore, be significantly distorted by project delays or cancellations that can occur for a variety of reasons. These include difficulties in forming a consortium, or securing other funding that may have been contingent on SDTC approval. The 12.6 million tonnes of projected reductions in greenhouse gas emissions calculated by SDTC reflect all 74 active projects that have been approved, as depicted in Exhibit 1.18, including the 30 projects with signed contracts. These projections do not take adequate account of delays that can occur after project approval. Such delays can shift the point at which reductions are projected to start. For example, in one large active project, approved in May 2004, but without a signed contract, the delay could reduce the projected reduction in greenhouse gas emissions by about 0.6 million tonnes in 2010.

Educar 1.78 As of January 2006, Sustainable Development Technology Canada expected the projects to achieve significant greenhouse gas emission reductions by 2010



1.120 As a result, SDTC's projections for reductions in greenhouse gas emissions in 2010, which are reported to Parliament and the public, may be overly optimistic, although the projected reductions might be realized or exceeded in the longer term.

1.121 SDTC reports that the average amount of time taken from a project start date to the completion of the development and demonstration activities is 3.7 years. Therefore, projects approved in 2007 or later are unlikely to make a significant contribution to greenhouse gas emission reductions by 2010. However, they could do so over a longer time.

1.122 Recommendation. For its funded projects, Sustainable Development Technology Canada should adopt alternative approaches to reporting projected reductions in greenhouse gas emissions, using a conservative approach. In particular, SDTC should re-examine the appropriateness of its discount rate and adjust its projection to account for significant project delays. Reported projections should be accompanied by a more explicit disclaimer, and they could reflect the status of the project (approved, contracted) and/or different time horizons for projected emission reductions. Once projects have been successfully completed, and the technologies have entered the market, the Foundation should begin reporting actual reductions.

The Foundation's response. Sustainable Development Technology Canada (SDTC) accepts the recommendation and plans to re-examine its reporting methodology for projected reductions in greenhouse gas emissions in 2007.

There is little precedent for reporting on projected reductions in greenhouse gas emissions, particularly for new technologies. In the absence of established methodologies, SDTC has drawn on findings in other markets to establish and apply a discount factor to applicant projections of 90 percent across the portfolio of investments to

account for potential technological and market failures. SDTC is of the opinion that the 90 percent discount rate results in conservative projections. With SDTC's first seven projects starting their three-year reporting period, and other projects nearing completion, SDTC will be able to revisit its projections and discount rate in the coming years. In addition, SDTC fully intends to report on actual reductions reported by the applicants, once projects have been successfully completed and have entered the market.

SDTC will enhance its projections with a more explicit disclaimer in its next corporate plan, to be published in October 2006. SDTC currently reviews the contract status of approved projects on a regular basis. Based on operational experience gained over the first four years of funding, SDTC is now in a better position to anticipate project delays and determine their potential impacts. As SDTC reviews its publicly reported projections, in October 2006, it will adjust them to more explicitly account for delays, which could cause significant changes in the anticipated timing of greenhouse gas emission reductions.

#### Conclusion

- 1.123 We found that the federal government's relationship with SDTC is reasonable given the distinctive nature of this relationship. In our view, the federal government has taken reasonable steps to ensure that SDTC's climate change activities are effectively aligned with other federal climate change programs and that SDTC is operating in a specific niche area.
- **1.124** We determined that SDTC's strategic decisions related to its climate change activities are consistent with its mandate and its applicable funding agreements. We found that SDTC has taken reasonable steps toward fulfilling its climate change mandate. We concluded that SDTC's processes for selecting and managing climate change projects are satisfactory.
- 1.125 We also found that the Foundation has put in place a satisfactory process for measuring and reporting the results of its climate change activities, although it is too early to report on actual reductions in greenhouse gas emissions. However, SDTC's reporting of projected reductions in greenhouse gas emissions by 2010 does not include a sufficiently explicit disclaimer so that the public does not place undue reliance on the projections. It also does not adequately take into account project delays that can occur after project approval.
- **1.126** Since only seven SDTC-funded projects have completed their development and demonstration activities, and since some of these technologies have just begun to enter the market, SDTC has

insufficient information to assess and report fully on the degree to which it has achieved its goals. Once such information becomes available, SDTC will be better placed to assess and report more fully on its outcomes or impacts, such as reducing greenhouse gas emissions and building a sustainable development technology infrastructure in Canada.

# About the Audit

# Managing the federal approach and emissions trading

## **Objectives**

- 1. To determine the extent to which the federal government has put in place a suitable management framework for the climate change initiative
- 2. To determine whether the federal government is able to assess its major climate change spending so as to report reliably and fairly on the costs involved in the climate change initiative
- 3. To determine if greenhouse gas emissions reduction strategies, including targets and policy tools for selected sectors, such as transportation and large final emitters, are based on sound data and analysis
- 4. To determine if the federal government is prepared to implement an effective domestic greenhouse gas emissions trading system in Canada

# Scope and approach

Climate change is a broad issue that cuts across departments and agencies. The results of our preliminary audit work helped us to determine which federal departments and agencies to audit. The audit focussed on three central agencies and five departments with a variety of mandates for the management of climate change activities within Canada and internationally. We also selected them based on their relative contribution to the federal climate change initiative. We identify the eight departments and agencies, and the corresponding audit objectives against which they were assessed (Exhibit 1.19).

Exhibit 1.19 Departmental and agency coverage by audit objectives

Endard department or organic	Audit objectives			
Federal department or agency	1	2	3	4
Canadian International Development Agency	0	0	0	0
Environment Canada	•	0	0	0
Foreign Affairs and International Trade Canada	0	0	0	0
Natural Resources Canada		0	0	0
Transport Canada	0	0	0	0
Central agencies				
Finance Canada	0	0	0	0
Privy Council Office		0	0	0
Treasury Board Secretariat	0	0	0	0

Assessed against objective

ONot assessed against objective

For each audit objective, we interviewed departmental officials and relevant stakeholders and reviewed departmental files, reports, and other documentation. Stakeholders were selected to represent a range of perspectives on federal performance, including that of provincial governments, industry, environmental non-government organizations, and market experts in the area of emissions trading. We identified international practices concerning emissions trading by reviewing key documentation and consulting relevant stakeholders.

In addition, we examined two sustainable development strategy commitments related to the audit objectives. We present the results of this work in Chapter 4, Sustainable Development Strategies. For each commitment, we interviewed key departmental officials and examined relevant documents. For Finance Canada's commitment, we also assessed the Department's response to a questionnaire.

Similarly, we examined Environment Canada's response to environmental petition 63 to determine whether the Department had taken action on its commitment to ensure that reports on the *Climate Change Plan for Canada* (2002) "[would] be made to the public every two years." We address the issue in this chapter and in Chapter 5, Environmental Petitions.

#### Criteria

- We expected that the federal government would have developed and implemented a regime for managing and co-ordinating the federal climate change initiative, and that the Privy Council Office and Treasury Board Secretariat would play appropriate roles in managing this horizontal initiative (Objective 1).
- We expected that the government had developed and implemented a framework for monitoring and reporting climate change expenditures (Objective 2).
- We expected that the federal government had conducted adequate analysis (economic, environmental, social, and risk) with respect to Canada's overall greenhouse gas emissions reduction target, sectoral emissions reduction targets, and selected policy tools (Objective 3).
- We expected that the federal government had conducted adequate analyses, identified main steps, developed an action plan, and implemented required actions for Canada's proposed domestic emissions trading system (Objective 4).

# Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

#### Audit team

Principal: Richard Arseneault Lead Director: George Stuetz

Director (Financial): Caroline Smallman

Lisa Harris Kathleen Hobbs Stephanie Kalt Mark Lawrence Jessica Ling Erick Ordeman James Reinhart

# Sustainable Development Technology Canada

# **Objectives**

One set of audit objectives primarily focussed on the federal government's relationship with Sustainable Development Technology Canada (SDTC). Specifically, we assessed

- whether the federal government had ensured that SDTC's climate change activities are effectively aligned with other federal government climate change activities, and
- whether the federal government's oversight of SDTC's climate change activities is appropriate and whether the federal government is providing Parliament with appropriate information in a timely manner.

Another set of audit objectives primarily focussed on how well SDTC was fulfilling its mandate with respect to its climate change activities. Specifically, we assessed the extent to which

- SDTC's strategic decisions adhered to its mandate (object and purposes) as set out in the Canada Foundation for Sustainable Development Technology Act and its applicable funding agreements with respect to its climate change activities;
- SDTC's process for selecting and managing climate change projects were adequate given the context in which it operates, and are conducted in an independent and objective manner; and
- SDTC had established satisfactory procedures to measure and report on the effectiveness of its climate change activities.

# Scope and approach

With respect to examining the federal government's relationship with SDTC, we focussed primarily on Natural Resources Canada and Environment Canada—the two sponsoring departments and signatories to SDTC's funding agreements. We also examined Industry Canada, given its involvement in the work of the Foundation through its interest in the technology sector.

Our examination of how well SDTC was fulfilling its mandate focussed on SDTC's activities related to climate change. It included a review of 30 projects that were selected because of their risk profile, including those that are significant in terms of dollars and projected reductions in greenhouse gas emissions. Our examination also included field visits to meet with selected project proponents.

We did not audit all aspects of SDTC, but focussed on decision-making and management processes relevant to its climate change mandates. Several of these processes are also used to deliver on SDTC's clean air, clean water, and clean soil mandates, although we did not audit these other mandate areas.

We considered it important to examine the Foundation, given its sizeable level of funding for its climate change activities (\$280 million in dedicated funding) and its distinctive relationship with the federal government.

Our examination does not express a view about the merits of foundations as tools to achieve the government's policy objectives.

The Office of the Auditor General was granted the mandate, by Parliament, in June 2005 to conduct performance audits of certain foundations, including SDTC. The audit of SDTC is the first one undertaken under this mandate.

#### Criteria

The criteria for this audit were developed based primarily on the Canada Foundation for Sustainable Development Technology Act, SDTC's funding agreements, and prior Auditor General reports and internal guidance.

We expected that Natural Resources Canada and Environment Canada would

- · make reasonable efforts to harmonize and co-ordinate SDTC's climate change activities with other organizations delivering similar programs, and
- · develop a regime for reporting to Parliament and the public and for monitoring SDTC's activities.

# We expected that SDTC would

- ensure that its strategic decisions related to its climate change activities meet its object (mandate) as set out in the Canada Foundation for Sustainable Development Technology Act, sections 2 and 5, and its funding agreements;
- ensure that its project approval and funding processes are designed to manage risks, ensure due diligence in spending, and achieve expected results; and
- · put in place provisions for review, analysis, and corrective adjustment in accordance with the applicable funding agreements.

## Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

#### Audit team

50

Principal: Neil Maxwell Director: Bob Pelland

Pierre Fréchette Roger Hillier

For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

# **Appendix** List of recommendations

The following is a list of recommendations found in Chapter 1. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

#### Recommendation

#### Managing the federal approach

1.34 Environment Canada, in collaboration with the Privy Council Office and the Treasury Board Secretariat, should ensure the development and implementation of effective governance and accountability for the climate change issue within the federal government. Key roles and responsibilities should be defined, assigned, and publicly reported; and which departments participate and how they do so should be specified. Appropriate funding, development, and implementation of mechanisms need to be established for

- overall decision making,
- ongoing interdepartmental co-ordination,
- monitoring and reporting to
   Parliament and to Canadians about past and future financial and non-financial performance related to climate change activities, and
- evaluation and adjustment of policies and programs for climate change. (1.9-1.33)

# Entities' response

The government's response. It is correctly pointed out in this chapter that a complex issue that implicates a number of federal organizations such as climate change requires effective horizontal management, including appropriate governance and accountability mechanisms. The government agrees that roles and responsibilities should be clearly defined, processes to support decision-making and co-ordination established, results reported to Parliament and Canadians in a transparent manner, and policies and programs subjected to regular evaluation and adjustment.

In its response to Chapter 4 of the November 2005 Report of the Auditor General of Canada, the government made specific note of the central agency function in respect of horizontal initiatives. That function is to play a facilitating role in the launch of such initiatives in order to ensure that they are positioned effectively within government priorities and are established in such a way as to ensure that an integrated approach is developed. The Privy Council Office ensures that appropriate departments are involved in the Cabinet processes, that departmental leadership roles are identified, and that, where necessary, horizontal governance structures are put in place.

At the same time, the Privy Council Office and other central agencies, such as the Treasury Board Secretariat, must respect the leadership and accountability of departments to implement initiatives, such as climate change, in a manner that is consistent with their areas of responsibility and respects Treasury Board management practices. As is acknowledged in this chapter, it is the responsibility of departments and agencies to manage such initiatives.

The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and

Recommendation	Entities' response	
	effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development on governance and accountability will be considered in developing the agenda.	

#### The federal approach in the transportation sector

- 1.44 Natural Resources Canada should ensure that the model, data, and results from the 2005 memorandum of understanding with the automotive industry are independently verified and that the results of the verification are reported publicly. (1.40-1.43)
- 1.45 In any future voluntary agreements, Natural Resources Canada should establish requirements similar to those found in Environment Canada's 2001 Policy Framework for Environmental Performance Agreements. While the automotive industry agreement addresses many of these requirements, at a minimum, such future agreements should include
- senior-level commitment by involved parties,
- clearly identified environmental objectives,
- baseline levels measured at the beginning of the agreement,
- clear targets with timelines,
- meaningful performance measures,
- clearly defined roles and responsibilities for all parties,

Natural Resources Canada's response. Natural Resources Canada agrees with the recommendation. The Department has initiated discussions with the vehicle industry on independent verification of the data, model, and results from the accounting model used to monitor the memorandum of understanding with the auto industry before the first report on interim goals for the 2007 model year. The intention would be to ensure that the results of that verification would be available to the public. In addition, the department and industry have already released a progress report that is supplemental to the requirements of the memorandum of understanding.

Natural Resources Canada's response. Natural Resources Canada recognizes the requirements listed in Exhibit 1.8 of the present report and identified in Environment Canada's 2001 Policy Framework for Environmental Performance Agreements. The Department will immediately investigate options for adopting a similar policy framework for future voluntary agreements in the auto sector and for other sectors.

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#### Recommendation

- consequences for failing to meet targets and incentives for achieving them,
- periodic public reporting requirements,
- provision for regular credible verification, and
- regular evaluation of the agreement to determine progress and options for implementing corrective action, where necessary.
   (1.40-1.43)

# Entities' response

#### Addressing greenhouse gas emissions from large industrial emitters

ensure that emissions reductions achieved by the Large Final Emitter System are real, measurable, and verifiable, and that the method used to calculate them is transparent to parliamentarians and the public. Environment Canada should also assess on an ongoing basis, and in a transparent and timely manner, the uncertainties and risks associated with the system and implement actions to address them. (1.46-1.53)

Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.

#### Emissions trading as a tool

1.86 Environment Canada will need to put mechanisms in place to ensure that the first phase of Canada's emissions trading system, including the Large Final Emitter System, works effectively. To ensure that emissions reductions are real, measurable, and verifiable, Environment Canada should

Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.

#### Recommendation

Entities' response

- commit sufficient resources to develop, implement, and evaluate the system;
- test and adjust monitoring, reporting, and verification systems to ensure that information reported is complete, accurate, and useful;
- ensure transparency by publishing key data, including the business-as-usual projections, that parliamentarians and the public require to assess progress against targets;
- develop a good communication strategy to fully inform all players about plans to introduce trading and to guide the players on how to participate effectively; and
- engage an independent, expert advisory panel to monitor progress on system design and implementation the panel should report annually and publicly.

At the end of the first phase, Environment Canada should

- evaluate the systems to identify issues of concern in areas such as cost, results, and effectiveness;
- report its findings publicly;
- consult relevant players and experts about potential system adjustments; and
- adjust the emissions trading system and its components to address serious issues of concern.
  (1.61-1.85)

#### Recommendation

# Sustainable Development Technology Canada

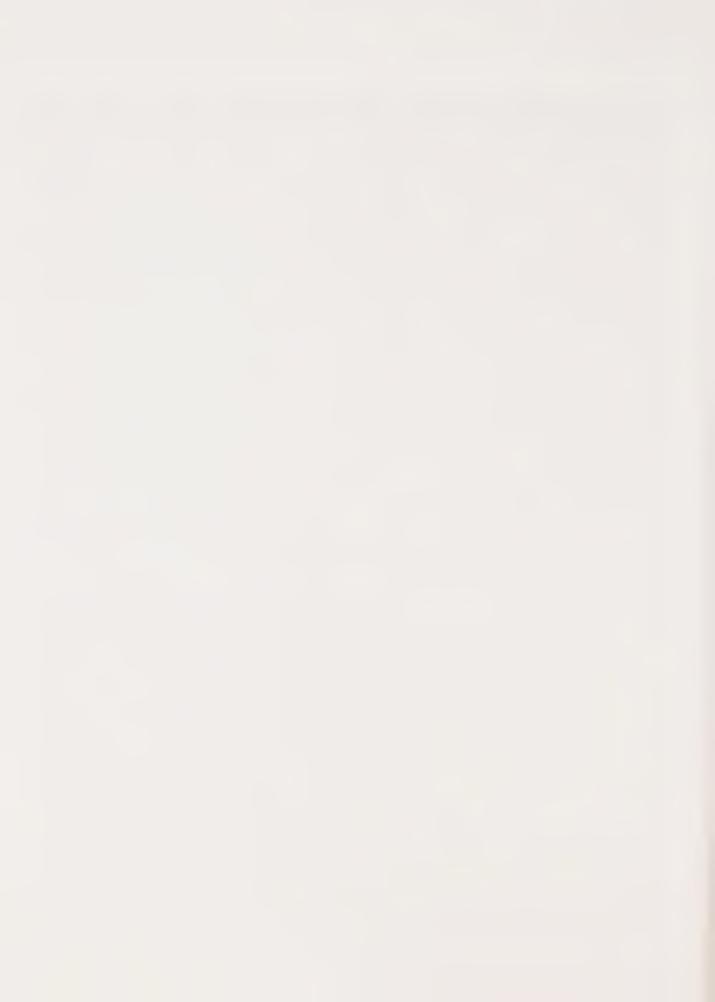
1.122 For its funded projects, Sustainable Development Technology Canada should adopt alternative approaches to reporting projected reductions in greenhouse gas emissions, using a conservative approach. In particular, SDTC should re-examine the appropriateness of its discount rate and adjust its projection to account for significant project delays. Reported projections should be accompanied by a more explicit disclaimer, and they could reflect the status of the project (approved, contracted) and/or different time horizons for projected emission reductions. Once projects have been successfully completed, and the technologies have entered the market, the Foundation should begin reporting actual reductions. (1.117-1.121)

## Entities' response

The Foundation's response. Sustainable Development Technology Canada (SDTC) accepts the recommendation and plans to re-examine its reporting methodology for projected reductions in greenhouse gas emissions in 2007.

There is little precedent for reporting on projected reductions in greenhouse gas emissions, particularly for new technologies. In the absence of established methodologies, SDTC has drawn on findings in other markets to establish and apply a discount factor to applicant projections of 90 percent across the portfolio of investments to account for potential technological and market failures. SDTC is of the opinion that the 90 percent discount rate results in conservative projections. With SDTC's first seven projects starting their three-year reporting period, and other projects nearing completion, SDTC will be able to revisit its projections and discount rate in the coming years. In addition, SDTC fully intends to report on actual reductions reported by the applicants, once projects have been successfully completed and have entered the market.

SDTC will enhance its projections with a more explicit disclaimer in its next corporate plan, to be published in October 2006. SDTC currently reviews the contract status of approved projects on a regular basis. Based on operational experience gained over the first four years of funding, SDTC is now in a better position to anticipate project delays and determine their potential impacts. As SDTC reviews its publicly reported projections, in October 2006, it will adjust them to more explicitly account for delays, which could cause significant changes in the anticipated timing of greenhouse gas emission reductions.



# Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—2006

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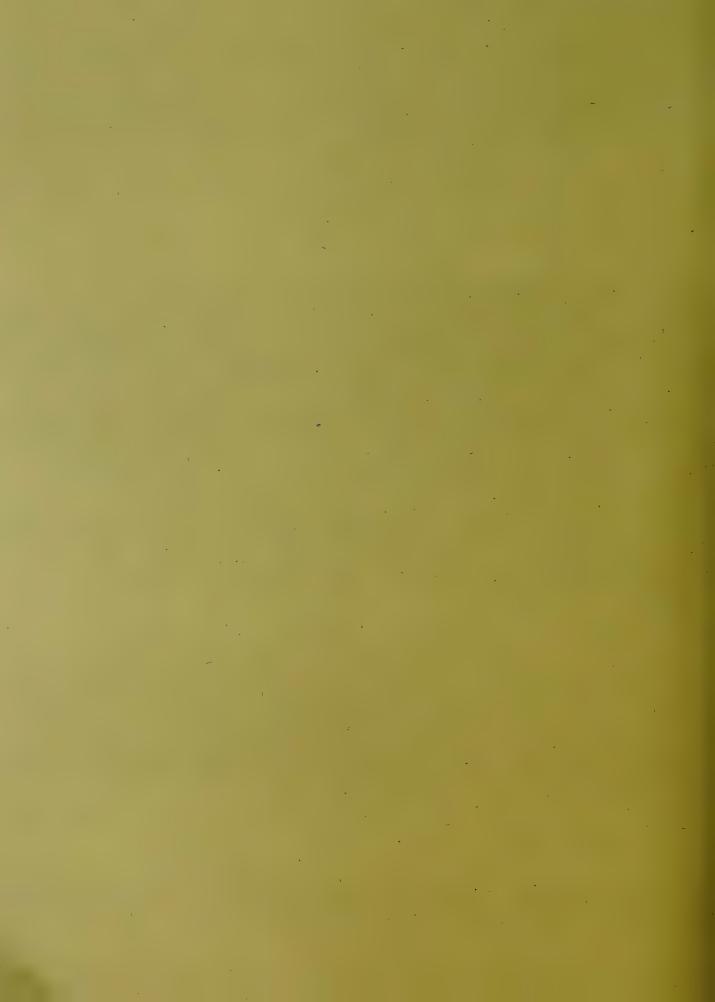
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2006



Report of the
Commissioner of the
Environment and
Sustainable Development
to the House of Commons

Chapter 2 Adapting to the Impacts of Climate Change



Office of the Auditor General of Canada



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# 2006



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Sustainable Development

to the House of Commons

Chapter 2
Adapting to the Impacts of Climate Change



Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.



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## Chapter

2

Adapting to the Impacts of Climate Change

The audit work reported in this chapter was conducted in accordance with the legislative mandate, policies, and practices of the Office of the Auditor General of Canada. These policies and practices embrace the standards recommended by the Canadian Institute of Chartered Accountants.	

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# Adapting to the Impacts of Climate Change

## **Main Points**

What we examined

We examined whether the federal government has strategies and action plans in place for adapting to and managing the impacts of climate change. We focussed on the work of Environment Canada and Natural Resources Canada in this area. In addition, we examined the work of Public Safety and Emergency Preparedness Canada, Health Canada, and Agriculture and Agri-Food Canada, three departments responsible for areas likely to be affected by climate change. We also looked at whether Indian and Northern Affairs Canada is addressing the implications of climate change in the North.

We also assessed whether the federal government has taken steps to obtain, analyze, and share the information needed to identify the potential impacts to which Canadians are exposed because of climate change. We focussed on the work of Environment Canada and Natural Resources Canada in climate modelling (which provides information on possible future climate conditions), collecting and analyzing climate observations, and conducting research on the impacts of climate change and means of adapting to them.

Why it's important

Canada is vulnerable to the impacts of climate change. More extreme and intense weather events, such as extended heat waves and winter storms, increase the risk to Canadians' health and safety. Climate change is expected to create additional stresses on Canada's water resources. It is also likely to trigger adverse socio-economic impacts in regions that depend on natural resource industries such as forestry and agriculture. The effects of warming are expected to be greater in Canada's northern latitudes than in other regions; many aspects of life in the North are already affected by melting permafrost and reduced sea ice.

Canada has committed to facilitating adaptation to the expected impacts of climate change. Taking steps now to adapt to a changing climate can help protect Canadians and their assets and reduce the potential economic, social, and environmental costs.

#### What we found

- The government has not yet put in place key measures to support Canadians in adapting to a changing climate. Nor has it clarified how it intends to manage its own adaptation efforts.
- The government has not developed a strategy for federal adaptation efforts to indicate the expected results and timelines, and which departments would assume what responsibilities. Federal progress in working with provinces and territories has been limited.
- Some departments we examined have begun work on their own strategies, but only one has been completed. Departments have made limited progress in using available information about the changing climate to assess potential implications on federal policies and programs.
- The federal government has supported the development of knowledge through impacts and adaptation research and initiatives that involve working with decision makers on adaptation solutions. There is sufficient information for adaptation to proceed. However, the federal government has not yet organized its activities in climate science to make sure that the federal departments and others obtain needed information. For example, there is a lack of up-to-date climate information for use in adapting the design of infrastructures such as storm sewers, and limited information is available to the public on possible future climate conditions in their area.

The departments and central agencies have responded. The departments and central agencies have accepted all of our recommendations; responses are included with the related recommendations throughout the chapter. However, the responses make no firm commitment to specific actions with time frames for implementation.

For a detailed description of the climate change issue, please consult **The Commissioner's Perspective**, which includes a section called **Climate Change**—An **Overview**.

Vulnerability—The degree to which a natural or man-made system is susceptible to, or is unable to cope with, adverse effects of climate change, including climate variability and extremes.

Climate adaptation—Adjustments in ecological, social, or economic systems in response to climatic stimuli and their effects or impacts.



The changing climate creates sustainability challenges for future generations in Aboriginal and northern communities.

## Introduction

## Canada is vulnerable to the impacts of climate change

- **2.1** Over the last 50 years, the climate has been changing due to increasing greenhouse gas emissions, and experts around the world predict more and faster changes. These changes will likely lead to different impacts and vulnerabilities across Canada, resulting in benefits for some and climate adaptation challenges for many.
- 2.2 The majority of Canadians live in urban centres, where a changing climate will likely mean more risks to health from events such as longer and more intense heat waves and smog events (see Toronto's heat-health alert system, page 4). Increased risks to safety and property are also likely in some regions, due for example to coastal erosion from rising sea levels, or to more severe winter storms and more frequent events such as flash floods in areas where rains intensify.
- 2.3 The Arctic is expected to respond faster and more severely to projected climate change than other regions of the world. Canada's northern territories, particularly in the western Arctic, are already affected by a changing climate (see Melting permafrost destabilizes northern infrastructure, page 4). The consequences, such as melting of permafrost and the reduction of sea ice, are affecting many aspects of life in the North.
- 2.4 Dealing with a changing climate is also a sustainable development issue. The economic and social well-being of most Canadians is greatly influenced by the health and sustainability of our natural resource industries, including agriculture and forestry—sectors likely to suffer negative effects of a changing climate (see Prairie droughts threaten agricultural production, and Beetles ravage British Columbia's pine forests, pages 4 and 5).

## Adaptation involves a wide range of stakeholders

2.5 Vulnerability to the effects of a changing climate can be reduced by improving the ability to cope with them. In communities, sectors, and regions expected to feel the impacts, developing the capacity of Canadians to adapt is key and involves many players, including all levels of government. Stakeholders include not only residents of regions likely to feel the impacts, but also natural resource managers, transportation and municipal infrastructure managers, industries, nature conservation organizations, public health managers, emergency preparedness managers, engineers and planners, financial investors, the insurance industry, and Aboriginal people.

#### Adapting to climate change impacts on Canadian communities, sectors, and regions

#### Toronto's heat-health alert system

The number of excessively hot summer days is expected to rise in Toronto. The urban environment—extensive pavement and high-density buildings and structures made of concrete and glass—exacerbates the problem by re-radiating heat. Excessive heat can cause illness and premature death, and it promotes the spread of certain diseases and other adverse outcomes associated with climate change. Based on data from 1954 to 2000, the Toronto Medical Officer of Health estimates that on average, 120 premature deaths in Toronto each year can be attributed to heat. In 1999, Toronto Public Health began to develop a hot-weather response system to protect public health and prevent premature deaths. The Toronto Heat-Health Alert system is based on the historical relationship between heat-related deaths and specific weather types. Environment Canada daily weather forecasts are analyzed to determine when the Toronto Medical Officer of Health should issue a "heat alert" or "extreme heat alert." An extreme heat alert issued by the Medical Officer of Health triggers a co-ordinated response among key city agencies and community partners. The response includes media announcements about ways to beat the heat, activation of a Heat Information Line, outreach to socially isolated individuals and other vulnerable groups, opening of public cooling centres, and home visits by Emergency Medical Services. Longer-term adaptation strategies include urban reforestation and a move to reflective surfaces on roofs and roads.

#### Melting permafrost destabilizes northern infrastructure

Abundant mineral, oil, and gas resources position Canada's North for economic expansion. Natural Resources Canada estimates the value of diamond production in 2005 at \$1.7 billion. But development of northern natural resources is challenged by inadequate transportation infrastructure, a challenge that grows more difficult as northern temperatures rise and permafrost melts. Temperature increases of 4° to 5°C predicted for the Western Arctic by 2080 are likely to affect a large portion of the total permafrost area. Melting of permafrost reduces the load-bearing strength of the land, causes the ground surface to sink, and threatens the stability of roads, airport runways, pipelines, water supplies, waste-water disposal structures, and older buildings. A temperature rise could cause structural damage to infrastructure foundations. An "ice road" is a temporary highway using the surface of frozen rivers and lakes. The "ice road" season could be shortened substantially. Stabilizing existing infrastructure and developing new construction methods to adapt to changing conditions are critical to maintaining ground access in Canada's North.



Changes in ground surface due to melting permafrost can affect the stability of structur Photo: Natural Resources Canada

#### Prairie droughts threaten agricultural production

The Canadian Prairies have always been susceptible to drought, and many climate models predict that droughts will become more frequent and widespread as temperatures continue to rise. Drought uses up soil moisture and surface waters in the summer, increases the risk of crop failure, and contributes to soil erosion and desertification. Its effects may be too great to be offset by the occasional wet year that climatic extremes are likely to include. The economic fallout of a severe drought can be devastating. In 2001, for example, Alberta livestock inventories plummeted because feed and water were scarce, some crops were almost completely lost, and net farm income was zero in Alberta and at a deficit in Saskatchewan. Crop insurance payments in these two provinces skyrocketed from about \$600 million in 2001 to nearly \$1.9 billion the following year. The Prairie Farm Rehabilitation Administration has been helping farmers adapt to drought in a variety of ways since its creation over 70 years ago. Supporting farmers in the future could require far-sighted adaptation strategies to deal with potential long-term effects of climate change, such as prolonged drought.



Decisions at the farm level will be key for adaptation to more intense and more frequent droughts.

Photo: Craig Douglas, Canadian Wheat Board

## Adapting to climate change impacts on Canadian communities, sectors, and regions

#### Beetles ravage British Columbia's pine forests

The mountain pine beetle lays its eggs under the bark of lodgepole pine trees, found throughout western North America. Emerging larvae feed on the inner bark of the tree, and bluestain fungi introduced by the beetle discolours the tree's sapwood. Larvae and fungi together kill most infested trees. Unseasonable cold temperatures in the fall, winter, and spring are needed to control populations; hot and dry summers leave trees more susceptible to attack. In the last few decades, B.C. has seen a change in climatic conditions, such as warmer winters that have allowed the mountain pine beetle populations to spread. As the climate continues to change, it is likely that the mountain pine beetle will continue to expand into new habitats. The current outbreak in B.C.'s west-central interior is the largest in the province's history, affecting 8.7 million hectares of forest in 2005, altering wildlife habitat and reducing biodiversity, and threatening the livelihoods of some 30 communities and 25,000 families. Accelerated harvesting allows dead trees to be cut before they lose value, but it will take many decades to rebuild the supply. In 2002 the federal government announced the six-year, \$40-million Mountain Pine Beetle Initiative aimed at studying the impacts of infestations and how to mitigate them. It provided techniques and funding to rehabilitate forestlands and reduce the risk of new outbreaks and included research on the potential effects of a changing climate on outbreaks.



Source: Natural Resources Canada (February 2005)

**2.6** Access to information, technology, resources, and partners, as well as federal involvement can advance adaptation. "Adapting to climate change impacts on Canadian communities, sectors, and regions" (pages 4 and 5) provides examples.

#### Canadians recognize the need to facilitate climate adaptation

- 2.7 Canada has recognized the need to facilitate adequate adaptation to a changing climate since 1992, when it ratified the United Nations Framework Convention on Climate Change. In 2005, the House of Commons Standing Committee on Environment and Sustainable Development noted the urgency of this need and recommended that the federal government co-operate with the provinces and territories to develop a strategy for adapting to climate change.
- 2.8 The federal government has made commitments and statements recognizing the need to work on adaptation to climate change—for example, through the Climate Change Action Fund, Action Plan 2000, the 2002 Climate Change Plan for Canada, and departmental sustainable development strategies. In particular, Indian and Northern Affairs Canada made a commitment to develop an Impacts and Adaptation Strategy through the Aboriginal and

Northern Community Action Program and in its third sustainable development strategy. Between 1998 and 2006, the government announced a total of about \$82 million in new funding to carry out work related to science, impacts, and adaptation (Exhibit 2.1).

#### Exhibit 2.1 Key federal initiatives supporting work on impacts and adaptation

Climate Change Action Fund. The fund is a \$300-million initiative of the Government of Canada to help develop a national implementation strategy and to support early actions in response to climate change. Between 1998 and 2004, total funding of \$30 million was announced for work on science and on impacts and adaptation. The fund has supported 101 projects under the science component and 106 projects under the impacts and adaptation component. The projects, selected through open calls for proposals, included Arctic research and monitoring, improvement of climate modelling, research on extreme climate and weather events, and assessment of vulnerabilities and risks to areas such as human health, coastal zones, agriculture, and permafrost.

Action Plan 2000. The plan is a \$500-million initiative of the Government of Canada intended mainly to reduce Canada's greenhouse gas emissions. It also includes some funding to set the stage for future measures in areas such as technology, science, and adaptation. The plan included additional funding of \$30 million to Natural Resources Canada from 2001 to 2006 to link Canadian researchers and develop knowledge for helping Canadians adapt. The Department used this funding to set up the Climate Change Impacts and Adaptation Program. The plan also included \$20 million for additional science work.

Aboriginal and Northern Community Action Program. Funding of \$30.7 million was announced for the program, intended mainly to reduce greenhouse gas emissions by working with Aboriginal and northern communities between 2003 and 2008. The program includes about \$2 million to develop an adaptation strategy and to implement adaptation projects.

#### The federal role in impacts and adaptation

- 2.9 The federal government has the right to enter into agreements on behalf of Canada, such as the United Nations Framework Convention on Climate Change. Implementing such agreements requires that federal, provincial, and territorial governments work closely together. The federal government and individual departments are responsible for managing risks to their policies and programs, including risks such as those resulting from a changing climate.
- 2.10 Natural disasters, including those that are weather-related, are very costly to the economy and society. When the costs of dealing with the consequences of extreme climate conditions exceed what an individual province or territory could reasonably be expected to bear on its own, the Government of Canada often provides financial support. For example, through the Disaster Financial Assistance Arrangements it provides aid to the provinces and territories affected by a disaster. Since the creation of these arrangements in 1970, the

federal government has provided over \$1.7 billion in assistance for over 140 events. Another example is Agriculture and Agri-Food Canada, whose federal/provincial Crop Insurance and Canadian Agriculture Income Stabilization programs compensate for production and income losses caused by drought. Climate change is expected to increase the potential liability to the federal government.

- **2.11** The federal role in climate science and research on impacts and adaptation includes
  - establishing and operating climate monitoring networks to provide long-term records of the climate system and natural and human systems likely to be affected by climate change;
  - carrying out climate modelling to provide information about the possible climate conditions in the future;
  - conducting research on impacts and adaptation in response to policy needs; and
  - providing a national leadership role in the direction, co-ordination, and funding of climate science in Canada.

#### Focus of the audit

- 2.12 Our audit focussed on assessing whether the federal government had put in place key elements of a strategy to help Canadians adapt to a changing climate. We examined Environment Canada and Natural Resources Canada (the federal departments most directly involved in climate change activities) and the work of Public Safety and Emergency Preparedness Canada, Health Canada, and Agriculture and Agri-Food Canada (three departments responsible for areas likely to be affected by climate change). We also looked at whether Indian and Northern Affairs Canada is addressing the implications of climate change in the North.
- 2.13 We assessed whether the government had identified and prioritized vulnerabilities to potential impacts of a changing climate in Canadian communities, sectors, and regions and whether it had developed and implemented action plans to address them. We examined federal activities government-wide and in departments, at the policy and program level, and in collaboration with provinces and territories.
- **2.14** We looked at the government's development and provision of information in three key areas: research on impacts and adaptation, climate monitoring to assess impacts and support adaptation, and modelling of possible future climate conditions on a regional scale.

**2.15** More details on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

## **Observations and Recommendations**

# Priorities and adaptation strategies

2.16 A strategy for adapting to a changing climate is a critical need, given the number of regions and sectors of the country that are potentially vulnerable and the number of players that will need to participate in adaptation efforts. Strategies support action by clarifying priorities for action, expected results and how they will be measured, timelines, and roles and responsibilities of the different players. Yet in none of the spheres of federal activity—government-wide, departmental, policy/program, and national (federal government working with provinces and territories)—did we find an adaptation strategy.

## Federal progress in working with provinces and territories has been limited

2.17 In 2005, federal, provincial, and territorial officials under the leadership of Natural Resources Canada completed a document that describes potential ways for governments to collaborate on adaptation. This document is the only systematic effort by the federal government to work with provinces and territories on a shared approach to adaptation across the country. It does not identify expected results, timelines, or roles and responsibilities. The document, entitled National Climate Change Adaptation Framework, was developed following a request by federal, provincial, and territorial ministers of the environment and energy in 2002. It has not been approved by the federal government. Natural Resources Canada officials also confirmed that federal officials have not been given authority to negotiate with the provinces to develop action plans for adaptation.

#### Federal priorities for action were not identified

2.18 A federal adaptation strategy was started in 2003 but not completed. In 2003, the federal government identified the need to co-ordinate and develop a federal adaptation strategy. It identified Natural Resources Canada as the lead department to develop a strategy with other federal departments and agencies, including all the departments we examined in this audit. The most recent version of a draft strategy was produced in May 2004.

2.19 In 2005, officials of Environment Canada and Natural Resources Canada launched another effort to develop a strategy. Unlike the previous effort, this exercise identifies policy issues, such as the extent of the federal role in adaptation. At the time of our audit, the strategy was at an early stage of development. Environment Canada and Natural Resources Canada each had a different interpretation of its own responsibility for completing the strategy. Neither department had been assigned the lead role; nor had roles of other departments in a federal strategy been identified.

## Some departments have begun work on their own strategies

- 2.20 The federal government has not directed departments to prepare their own adaptation strategies. Nonetheless, every department is responsible for managing risks that may affect their programs and activities. This includes risks created by a changing climate.
- 2.21 Some of the departments included in our audit are developing adaptation strategies on a regional or sectoral basis for activities under their responsibility, but none has been approved. For example, Indian and Northern Affairs Canada, along with partners, is making good progress on developing a strategy to identify priorities for action in the North. However, the federal government is left to react to impacts already being felt before a strategy has been completed for that region.
- **2.22** Natural Resources Canada is supporting the development of a strategy for the forestry sector. Environment Canada does not have an adaptation strategy apart from plans for programs already involved in adaptation research.
- **2.23** Agriculture and Agri-Food Canada and Health Canada have not developed their own adaptation strategies, although both noted that they participated in advancing the draft federal adaptation strategy. In the meantime, Agriculture and Agri-Food Canada is primarily focussing its efforts on various activities to support agricultural producers in dealing with variations in the weather up to a few years. Health Canada officials consider it premature to develop such a strategy.
- **2.24** Public Safety and Emergency Preparedness Canada (PSEPC), as a key department with a mandate to ensure the safety of Canadians and their assets, has developed a strategy to deal with natural hazards. The strategy is referred to as the National Disaster Mitigation Strategy. One reason for developing such a strategy is the expected increase in the frequency of certain types of extreme weather and climate events associated with a changing climate. The federal government has not yet approved the National Disaster Mitigation Strategy or funding for it.

## Progress has been limited in assessing the implications of a changing climate for federal policies and programs

- 2.25 Departments we looked at had made only limited progress in identifying how the policies and programs under their responsibility might need to be revised to address the impacts of a changing climate. For example, Natural Resources Canada has not systematically reviewed its legislation, policies, programs, and operations to determine how a changing climate might affect them. Officials told us that the Department plans to address the information gaps and methodological issues that it considers are hindering such an assessment.
- 2.26 Indian and Northern Affairs Canada, in collaboration with Aboriginal and northern partners, aims to complete a risk assessment in December 2006 to identify major policy gaps or issues related to climate change. In 2007 Health Canada plans to release the results of an assessment of health risks from climate change, to support the assessment of policies and programs in the health sector. It can then begin to assess the implications for its policies and programs.
- 2.27 Without a means to identify which policies and programs could be affected by a changing climate, it is difficult to identify departmental and federal priorities. (See Exhibit 2.2 for an example of a means of assessing the implications of climate change for policy development.)
- 2.28 In summary, progress on adaptation strategies has been limited. In the federal government's work with provinces and territories, expected results and an action plan have not been agreed on. At the federal level, there has been limited progress in identifying priorities for action, and the government has not clarified the roles of key

#### Exhibit 2.2 The United Kingdom's tool for assessing the implications of climate change on policies

Regulatory Impact Assessment (RIA) is an important tool intended to help government departments deliver better regulation. In the United Kingdom (UK), RIAs must be carried out for a wide range of policy initiatives. Climate change is one of the specified environmental impacts to be considered. In particular, officials conducting a RIA are asked to assess whether a proposed policy is vulnerable to the predicted effects of climate change. The UK Cabinet Office and individual departments provide guidance on conducting RIAs. In the case of climate change impacts, this guidance includes department-level definition of possible concerns and identification of departmental resource personnel. Officials also have access to an on-line tool designed to help integrate climate risks into decision making.

departments. At the departmental level, some of the departments included in this audit have started to identify priorities and to develop strategies for adaptation, but these have not been approved. Finally, there is limited progress in using available information about the changing climate to assess the potential implications for federal policies and programs.

- 2.29 Since ratifying the United Nations Framework Convention on Climate Change, the federal government has not clarified whether and to what extent it intends to deal proactively with the potential impacts of a changing climate. Furthermore, it has not clarified whether it intends to focus mainly on the implications for its own policies and programs or on the potential impacts on Canadians that it identifies in collaboration with other levels of government. Work with other levels of government and other stakeholders could include, for example,
  - identifying regional or sectoral priorities;
  - identifying intended federal actions in areas of federal responsibility, and federal actions to be taken with other levels of government and those who will need to adapt; and
  - working with other levels of government and those who will need to adapt to develop and implement an adaptation strategy.
- 2.30 Climate change will potentially affect the activities of the departments included in this audit as well as those of many other federal departments and agencies. It can be expected that co-ordinated action will be needed among federal departments and agencies to address departmental, federal, and national priorities. The federal government has not clarified how it intends to manage adaptation to a changing climate; nor has it specified the responsibilities of individual departments in a federal adaptation effort. One of the responsibilities of the Privy Council Office is to provide advice on and support to the machinery of government. At the conclusion of our audit, the Privy Council Office advised that the Minister of the Environment has been given the lead responsibility for developing a plan on the environment that covers climate change, including the development of adaptation policy.
- **2.31** Recommendation. Environment Canada and the Privy Council Office should identify the responsibilities and accountabilities of the federal departments and agencies that are to be involved in a federal adaptation effort. Those departments and agencies should then clarify

how the Government of Canada will manage adaptation to a changing climate, including

- identifying the extent to which the federal government intends to work with other levels of government and stakeholders, and what it will contribute; and
- developing and implementing a federal adaptation strategy to address federal priorities. The strategy should include an assessment of the implications of a changing climate for federal policies and programs.

Government's response. Recommendation accepted. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendations of the Commissioner of the Environment and Sustainable Development on adapting to the impacts of climate change will be considered in developing the agenda.

## Information to support adaptation

## Federal research on impacts and adaptation is yielding results

- 2.32 Knowledge and information required to identify potential impacts, assess vulnerabilities, and design adaptation measures can come from two sources. One source is research on the potential impacts of climate change and factors to consider in adaptation. The type of information from this research is typically produced by those assessing the vulnerabilities of sectors, communities, and regions, or those designing adaptation options. The second source is climate science activities, such as climate monitoring and modelling. The type of information produced by these activities typically serves a wide range of users, including those who need it for adaptation. Both types of information are important to form a solid basis for adequate adaptation (Exhibit 2.3). We looked at the government's efforts to address the need for both types of information.
- **2.33** The first category of information includes understanding impacts and how they can be addressed. Research on impacts and adaptation ranges from the study of biophysical and socio-economic impacts to the study of options for, and constraints to, adaptation. (See Exhibit 2.4 for an example of the results of such research.)

#### Exhibit 2.3 Interactions between key federal areas considered in this audit

#### **Development of federal adaptation strategies** Level Possible strategies National (Federal government working with A federal-provincial-territorial strategy that provinces and territories) includes dealing with potential water scarcity issues in the prairie provinces Federal A federal strategy that includes identifying the role and contribution of federal departments in addressing water scarcity issues Departmental A departmental strategy that shows how specific responsiblitlies in water management would be delivered to addresss potential water scarcity issues Policy and program An assessment of how potential water scarcity issues could affect federal drought programs Impacts and adaptation research Climate science Activity Possible activities Activity Possible results Assessing impacts Researching how changes in Monitoring climate Temperature and temperature and precipitation conditions precipitation patterns could lead to changes in the flow rates of rivers Obtaining information on Changes in regional temperature and precipitation possible future climate Assessing vulnerabilities Analyzing potential social, conditions from climate patterns between now and and risks economic, and environmental modelling year 2020 implications of changes in the flow rates of rivers on water uses, such as agriculture production, hydroelectric generation, and ecosystems sustainability Assessing adaptation options Evaluating options to manage and constraints water in regions where rivers have a change in their flow rates, such as water conservation measures and improved planning for drought

#### Exhibit 2.4 Rising sea level threatens coastal communities

Maritime provinces. As global temperatures creep upward, polar ice caps are slowly melting and oceans are expanding, causing sea levels to rise. Prince Edward Island (P.E.I.) has already felt the effects, with unusually high tides and storm-surge events becoming more frequent, resulting in coastal erosion, ecosystem alterations, and infrastructure losses. With relative sea levels expected to rise 30 to 110 centimetres by 2100, these effects will only worsen. In 2000–01, a collaborative study in P.E.I. led by Environment Canada and Natural Resources Canada addressed this growing concern. The study generated a new storm-surge model that is now used regularly to predict coastal flooding. Three possible flooding scenarios were modelled in the study, forecasting property losses in Charlottetown of \$172 million to \$202 million as well as huge losses in coastal infrastructure and tourism revenues. The P.E.I. study set the template for similar studies in New Brunswick and on Canada's west coast, which created important tools to assess adaptation measures for Canada's coastal communities as they face the effects of rising sea levels.

The Roberts Bank tidal flats at the Fraser River Delta. This is an area where the rise in sea level and increased storminess could have various impacts on different groups. The Roberts Bank tidal flats border the municipality of Delta and the Tsawwassen First Nation Reserve and represent an important habitat for a variety of migratory birds and juvenile salmon. Two major port facilities (the Westshore coal terminal and the Deltaport container terminal) and the Tsawwassen ferry terminal are also located at the edge of the flats. Natural Resources Canada is conducting research on potential impacts in this area, based on continuing discussion with stakeholders. For example, support for the project was sought and officially confirmed by a number of stakeholders before its start. Once the project was underway, the Department organized a workshop with stakeholders to obtain information on their concerns about the potential social, economic, and physical effects of climate change on Roberts Bank and to discuss potential adaptation measures. The workshop was attended by 32 participants from 18 organizations, including municipalities, federal government representatives, academia, and businesses.

- 2.34 Three key federal programs focus on researching impacts and adaptation. The Climate Change Impacts and Adaptation Program, the largest of the three, is managed by Natural Resources Canada. With a budget of \$30 million over five years (2001–06), the program has provided funding to and shared the results of projects intended to develop new knowledge about the vulnerability of key Canadian sectors to climate changes in the areas of health, landscape hazards, coastal zones, fisheries, forests, water resources, and agriculture. The program has provided support to most of the Canadian impacts and adaptation initiatives discussed in this chapter. It was designed to assist with knowledge needs, capacity building, and information sharing across the country. The program also maintains a database of impacts and adaptation research projects funded by the Climate Change Action Fund and Action Plan 2000. The database contains almost 200 research projects.
- 2.35 The Climate Change Impacts and Adaptation Program also manages the Canadian Climate Impacts and Adaptation Research

Network. This is a national network set up to assist in producing new climate change knowledge on key issues by bringing together decision makers from industry, governments, and non-governmental organizations. The network is organized into six regional and seven sectoral offices. Membership includes researchers and stakeholders. The offices are usually hosted by universities or federal departments, and their activities include maintaining a Web site and organizing workshops.

- **2.36** The second program, Reducing Canada's Vulnerability to Climate Change, is also managed by Natural Resources Canada and supports research to lessen the vulnerability of Canadians and their infrastructure and communities to climate change.
- **2.37** The third program is run by the **Adaptation and Impacts Research Division in Environment Canada**, with staff located at four universities. Through partnerships, the program provides climate data, analysis, research on impacts and adaptation, tool development, and scientific advice.
- 2.38 Knowledge base is being developed. The federal government has done many studies to address regional and sectoral issues, and it has supported several projects to connect researchers with decision makers who need to take a changing climate into account. By investing in research on impacts and adaptation, the federal government has recognized that it needs to consider adaptation. This includes addressing such steps as expanding the information base, building the capacity to analyze the issues facing Canada, and engaging stakeholders to draw on their body of knowledge and increase their willingness to deal with this issue.
- 2.39 Significant gaps remain. Canada's first national assessment, The Canada Country Study (Environment Canada, 1998), identified significant gaps in the knowledge of Canada's vulnerability to climate change. While subsequent research has filled some gaps, many are likely to remain. To assess the current state of this knowledge, Natural Resources Canada is undertaking a new national assessment of climate change vulnerability, impacts, and adaptation, to be completed in 2007. However, not having agreed on expected results in adaptation with provinces and territories, government-wide, in departments, or even in programs, it is difficult for the federal government to determine where to focus adaptation research efforts and how it should plan to contribute to them.

#### Planning of climate science activities for adaptation is on hold

- 2.40 Information on actual changes in the climate is obtained from climate monitoring. This includes the observation, recording, and analysis of the past and present state of the climate, based on systematic measurements from facilities with instruments and equipment at various locations, also referred to as climate monitoring networks. Other sources of data, such as tree rings and geological records, are also used. Climate monitoring is one of the building blocks to help us understand how our climate is changing.
- 2.41 Information on the possible future conditions of the climate is obtained from climate modelling. Climate models are mathematical representations of the Earth's climate system. One use of the models is to project the future state of the climate under various conditions. Environment Canada is the focal point for climate modelling in Canada. Fisheries and Oceans Canada and the university community are also involved in this work. (See Exhibit 2.5 for an example of the need for this type of information.)
- 2.42 In 2003, the federal government began to develop a plan to organize federal activities in climate science, including those in climate monitoring and climate modelling. The most recent draft of this plan, dated January 2005, is entitled the Climate Change Science Plan for Canada. The draft plan identifies desired results that would be developed specifically to support adaptation measures. For example, seasonal forecasts and information about possible future climate conditions would be made available to support decisions in key social and economic sectors. Environment Canada officials told us that the development of the plan is on hold.

## Climate monitoring activities need to consider adaptation

- 2.43 Adequacy of monitoring networks for adaptation was not assessed. Environment Canada has consulted stakeholders about the information they need from monitoring, including information to assess the impacts of a changing climate and information to design adaptation solutions. However, the federal budget for climate monitoring networks was reduced substantially during the 1990s, and we found that the Department has not yet assessed whether the monitoring networks are adequate to address the current needs of the stakeholders.
- 2.44 The analysis of climate data collected by the monitoring networks is also an important area for work on impacts—to determine trends used to detect changes in climate and produce information that

#### Exhibit 2.5 Hydro-Québec seeks answers from climate monitoring and modelling

Hydroelectric power generation supplies more than 40 percent of Quebec's energy needs, and provincially owned Hydro-Québec is the chief supplier. As climate changes, the water balance on which hydropower depends is also changing, raising questions about the long-term management of this energy source. State-of-the-art global climate models predict rising temperatures and increased precipitation throughout Quebec during this century, particularly in the North. This combination is expected to raise water levels in northern reservoirs, which bodes well for the hydro industry but may also cause flooding of critical waterways. In the south, rising rates of evapotranspiration (the transformation into vapour of water from the soil, plants, and waterbodies) may reduce water availability in the Great Lakes watershed, restricting the flow of the water needed to drive the turbines of St. Lawrence hydro plants. Hydro-Québec is looking to science, including climate monitoring and modelling to answer these questions.



A changing climate may affect the level of hydroelectric reservoirs, leading to financial implications.

Photo: Hydro-Québec

#### Did you know?

The estimated value of commercial, governmental, residential, and industrial infrastructure in Canada in 2000, according to the National Research Council: \$5.5 trillion

is useful for understanding the changing climate conditions. Environment Canada officials acknowledge that large quantities of climate data still need to be processed, digitized, archived, and made available for analysis.

**2.45** Key analysis of climate data to support infrastructure design was not conducted. Analysis of extreme weather events is necessary to support the design of infrastructures such as storm sewers. Environment Canada has not done a comprehensive analysis of extreme rainfall events since 1991. Since then, the frequency of extreme rainfall events has increased in some areas, making it more likely that infrastructure is not adequate for current and future climate conditions (Exhibit 2.6). We found that Environment Canada has not adjusted certain factors to take into account what users of this

information need to know about a changing climate. The density of the rainfall monitoring network and the level of effort required to analyze collected data and produce information about how often intense rainfall occurs have not been adjusted.

#### Exhibit 2.6 Building and upgrading of sewers based on outdated climate information

Many existing standards and codes depend on statistics based on historical weather data to determine specifications for infrastructure design. A good example is stormwater management. Practices used in stormwater management have evolved; however, the underlying assumptions about the climate are still usually based on historical climatic conditions, including for the frequency of intense rainfall events. Data on the frequency of intense rainfall events is derived from rainfall observation and is used to design infrastructures such as sewer systems and



Intense rainfall exceeding the capacity of storm sewers can lead to flooding.

Source: La Presse

culverts. For example, a "25-year storm" is a rainfall event of an intensity that is expected once every 25 years, averaged over a long period, or that has a four percent chance of occurring in any given year. The upgrading of aging infrastructure to handle more intense events has significant financial implications, and climate-related data is essential to designing the upgrades. Managing aging infrastructures or building new ones on the assumption that the climate is static can have significant impacts on the eventual cost.

#### More information on regional climates needs to be made available for distribution

- 2.46 Because adaptation often happens at a regional scale, there is an increasing need to better understand the processes that determine regional climate and to obtain information on regional climate change. This information is produced by two main methods: statistical analysis that brings the results of a global model down to a regional scale, or a regional climate model.
- 2.47 In the 2002 Climate Change Plan for Canada, the federal government identified as priorities the provision of climate information on a regional scale and further work on developing a model to provide this information. Environment Canada also made this a commitment in its third sustainable development strategy. Access to a good global climate model is a prerequisite to the work on a regional scale, and Environment Canada has been an international leader in global climate modelling.
- 2.48 Distribution of regional climate information is restricted. Environment Canada is collaborating with the Canadian Regional Climate Modelling Network in regional climate modelling. Academia

leads the work of the network. Although the Department has access to the information produced by the regional model, its ability to distribute this information to the public is restricted by contractual arrangements, including intellectual property rights. Consequently, the information the Department currently provides about possible future climate conditions on a regional scale is limited in the type, time period, and regions covered. The government's commitments to provide this information have yet to be fulfilled.

### Better access to information and to expert advice on adaptation is needed

- 2.49 Limited access to information about possible climate conditions in the future. Environment Canada and academia have developed a Web site designed for disseminating information about possible future climate conditions on a national and regional scale. Environment Canada manages this effort, referred to as the Climate Change Scenarios Network. Currently, the Web site contains very little regional information, and not all the regional Web sites envisaged to be included in the network have been set up. Meanwhile, users can be expected to need more from the network, including new and improved tools for obtaining information at a regional scale and access to additional climate change data, particularly on climate extremes.
- **2.50** As already noted, information about possible future climate conditions based on regional climate models can be obtained from Environment Canada's climate modelling group. However, the information is available only in a format that is more amenable to use by the scientific community.
- 2.51 Environment Canada believes that implementation of a mechanism to facilitate the exchange of information between producers and users of climate change information would be beneficial for both users and producers of results from climate models. However, setting up such a program is not within the current mandate of Environment Canada's modelling group. (See Exhibit 2.7 for an example of a means to distribute information and tools to support adaptation.)
- **2.52** Access to technical expertise on adaptation varies considerably across the country. Canada's federal government is involved in a variety of initiatives that provide access to information and technical expertise on climate adaptation tailored to the needs of their stakeholders (see Exhibit 2.8 for an example of one such initiative). This type of service is currently available to members of research groups, such as the Prairie Adaptation Research Collaborative, or to participants in a research project, such as the study

of sea-level rise that Natural Resources Canada is conducting with the municipality of Delta, British Columbia. Access to information and technical expertise on climate adaptation varies considerably across the country.

2.53 In summary, although the federal government made a commitment in 1992 to support adaptation, it has not yet organized its activities in climate science to make sure that those who will need to adapt, including federal departments and agencies, can obtain required information to identify potential impacts and vulnerabilities. The federal government has developed knowledge through research on impacts and adaptation, and it supports initiatives that involve working with decision makers to develop adaptation solutions. There is sufficient information for adaptation to proceed. However, access to information and technical expertise on climate adaptation varies considerably across the country. Much remains to be done.

#### Exhibit 2.7 A United Kingdom program provides information and tools to support adaptation

The United Kingdom Climate Impacts Programme (UKCIP) intends to help organizations assess how they might be affected by climate change so they can prepare for its impact. Set up in April 1997, UKCIP is funded by the Department for Environment, Food & Rural Affairs (Defra) and is based at the University of Oxford. The program works with its stakeholders and co-ordinates research on the impacts of climate change at regional and national levels. UKCIP provides support and guidance to both stakeholders and researchers throughout the process, and serves as a bridge between researchers and decision makers in government organizations and business. The program has been the catalyst for a range of regional and sectoral studies on the impacts of climate change. UKCIP is part of a wider program of research on climate change that Defra has undertaken.

#### Exhibit 2.8 Ouranos is developing information to support adaptation

The Ouranos Consortium was created in 2002 to bring together key partners in Quebec who have an interest in obtaining information and advice on adaptation issues. The value of long-term commitments at the disposal of the Ouranos Consortium in the form of pooled human, financial, technical, and computer resources is about \$12 million annually, nearly 40 percent of it representing cash contributions from Ouranos' partners. Environment Canada contributes in-kind resources, mostly in the form of several scientific staff. The combination of



Coastal communities need adaptation options to cope with more intense and more frequent storms.

Photo: François Morneau, Ministry of Public Security of Quebec

technical and financial resources allows the development of specialized expertise to meet the needs of the partners. For example, Quebec's Ministry of Transportation is a partner in the two-year Ouranos research project on the sensitivity of coastlines and the vulnerability of communities on the Gulf of St. Lawrence to climate change.

- 2.54 In federal climate science, Environment Canada is leading the co-ordination of efforts among federal departments and agencies. In research on impacts and adaptation, Natural Resources Canada manages the largest federal government program. Impacts and adaptation research and climate science, including climate monitoring and modelling, are both needed to support the development of adaptation strategies. Co-ordination between the two areas will be necessary to develop information and initiatives. Environment Canada and Natural Resources Canada have an important role to play in this co-ordination.
- 2.55 Considering that several stakeholders outside the federal government and federal departments and agencies, other than Environment Canada and Natural Resources Canada, will be the users of the information and initiatives developed for adaptation, it is important to involve them in the identification of needs.
- **2.56** Recommendation. Working with other federal departments and agencies producing or using information needed for adaptation efforts and with other levels of government and stakeholders, Environment Canada and Natural Resources Canada should
  - identify and fill gaps in the needed information, including results of impacts and adaptation research and results from climate science; and
  - identify the demand for initiatives that provide decision makers with access to information and technical expertise on adaptation tailored to their needs. Based on that work, they should strengthen existing initiatives and establish others, as required.

Departments' response. Environment Canada and Natural Resources Canada recognize the need to work with other departments and agencies within the federal government and will continue to do so, to identify information needed for adaptation efforts. Both departments recognize the necessity to consult users and decision makers, in particular other levels of government and stakeholder organizations across Canada.

The recommendations of the Commissioner of the Environment and Sustainable Development will be considered by the Government of Canada in developing its Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions.

## Conclusion

- Since its commitment in 1992 to address the impacts and adaptation aspects of climate change, the federal government has made limited progress in setting priorities and developing adaptation strategies to support Canadians. It has also made limited progress in organizing its activities to obtain information needed to identify potential impacts and address vulnerabilities. As a result, much remains to be done to ensure that Canadians are ready to deal with a changing climate.
- 2.58 Key elements of planning to adapt to climate change are identifying priorities and expected results, and developing strategies for adaptation. We found that the federal government, provinces, and territories have not jointly identified expected results. At the federal level, the government has made only limited progress in identifying expected results in adaptation. It has not clarified to what extent it intends to deal proactively with the potential impacts on its own or with other levels of government and those who will need to adapt. Nor has it clarified the roles of departments.
- Some of the departments included in this audit have started to identify priorities and develop their own adaptation strategies, but these have not been approved. Public Safety and Emergency Preparedness Canada has been working on an approach to deal with natural hazards. Indian and Northern Affairs Canada and Natural Resources Canada are developing strategies on a regional or sectoral basis for activities under their responsibility. Health Canada has initiated an assessment of risks to health from climate change. However, there is limited use by the government of available information to assess the potential implications of the changing climate for federal policies and programs.
- 2.60 The federal government has not yet organized its activities in climate science to ensure that those who will need to adapt, including federal departments and agencies, can obtain required information to identify the potential impacts of climate change. The government has developed knowledge through research on impacts and adaptation; however, without identified expected results in adaptation, it is difficult for the federal government to determine where to focus adaptation research efforts and how it should plan to contribute. Access to information and technical expertise on adaptation varies considerably across the country.

- **2.61** During the audit, we heard about various factors that could have contributed to the limited progress of adaptation efforts in Canada and elsewhere. These factors include the following:
  - Until recently, both the international and domestic policy focus was on whether to ratify the Kyoto Protocol and the rules that would govern its implementation.
  - It was believed that focussing on adaptation would distract from the mitigation discussion.
  - Adaptation as a policy issue is in its infancy.
- 2.62 The failure to make significant progress on adaptation efforts exposes Canadians' social and economic well-being to risk. Canada's North is already seeing far-reaching impacts on its economy, culture, and biodiversity; in the south, existing and new urban infrastructure may be unable to handle more frequent and intense weather events; and the largely negative impacts of a changing climate on agriculture and forestry illustrate how our resource economy is at risk. Taking steps now to adapt to a changing climate can help protect Canadians and their assets and reduce the potential economic, social, and environmental costs.

## About the Audit

#### **Objectives**

Our audit objectives were the following:

Determine whether the federal government, in co-operation with other levels of government and key stakeholders, as appropriate,

- has set priorities based on the identified risks to Canadians posed by climate change and developed a climate change adaptation strategy and action plans to manage the risks; and
- is implementing the climate change adaptation strategy and action plans, and is assessing, on a regular basis, the progress it has made in implementing adaptation measures.

Determine whether the federal government has organized itself to obtain, analyze, and disseminate sufficient and appropriate information to help identify the potential impacts on and risks to Canadians posed by climate change.

#### Scope and approach

Our audit focussed on whether Environment Canada and Natural Resources Canada have adequately assessed the impacts of climate change on Canadians and developed and implemented an appropriate adaptation strategy and action plans consistent with Canada's commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.

Other departments that we looked at in our audit to capture specific roles in program delivery, program design, or knowledge management related to setting priorities include

- · Agriculture and Agri-Food Canada,
- · Health Canada.
- · Indian and Northern Affairs Canada, and
- Public Safety and Emergency Preparedness Canada.

This audit did not include a review of federal activities related to supporting developing countries in managing their impact and adaptation activities, a commitment under the UNFCCC. We have also excluded from the scope of this audit Federal House in Order issues (for example, assessing the impact of climate change on federal government buildings and other infrastructure and possible adaptation measures). In addition, we excluded climate change impacts and adaptation on the international front (for example, impacts on foreign policy, tourism, and international water management agreements).

#### Criteria

Given the accountability focus of our audit objectives, our audit criteria were the following:

a) Identification of priorities and development and implementation of action plans

We expected that the federal government would

- analyze and assess the risks identified;
- · rank and prioritize the risks identified;
- design cost-effective risk prevention, reduction, or avoidance control measures;
- develop control procedures to minimize the risks identified;
- develop and publish national and, where appropriate, regional programs containing measures to facilitate adequate adaptation to climate change;
- implement, regularly update, and publish national and, where appropriate, regional programs containing measures to facilitate adequate adaptation to climate change;
- take into account climate change considerations, to the extent feasible, in its relevant social, economic, and environmental policies and actions, and use appropriate methods to minimize adverse effects on the economy, public health, and the quality of the environment of projects or measures undertaken to adapt to climate change; and
- clarify, document, and follow respective roles and responsibilities of federal and provincial governments and other organizations involved in implementing the climate change adaptation strategies/action plans and ensure that reporting requirements are clearly specified.
- b) Information to identify and address potential impacts and risks

We expected that the federal government would promote and co-operate in scientific, technological, technical, socio-economic, and other research; systematic observation; and development of data archives related to the climate system and intended to further the understanding of the causes, effects, magnitude, and timing of climate change and the economic and social consequences of various response strategies, and to reduce or eliminate the remaining uncertainties about them.

We expected that the federal government would

- identify the potential perils, factors, and types of risk to which government and Canadian assets, program activities, and interests are exposed;
- promote and co-operate in the full, open, and prompt exchange of relevant scientific, technological, technical, socio-economic, and legal information related to the climate system and climate change;
- identify high priorities for additional observations focussed on data-poor regions, poorly observed parameters, regions sensitive to change, and key measurements not made often enough; and
- implement data management systems that facilitate access, use, and interpretation of climate monitoring data and products.

We expected that departments and agencies would meet their performance expectations as set out in their sustainable development strategies.

#### Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

#### Audit team

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## **Appendix** List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

#### Recommendation

#### Government's response

#### Priorities and adaptation strategies

2.31 Environment Canada and the Privy Council Office should identify the responsibilities and accountabilities of the federal departments and agencies that are to be involved in a federal adaptation effort. Those departments and agencies should then clarify how the Government of Canada will manage adaptation to a changing climate, including

- identifying the extent to which the federal government intends to work with other levels of government and stakeholders, and what it will contribute; and
- developing and implementing a federal adaptation strategy to address federal priorities. The strategy should include an assessment of the implications of a changing climate for federal policies and programs.
   (2.16–2.30)

Recommendation accepted. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendations of the Commissioner of the Environment and Sustainable Development on adapting to the impacts of climate change will be considered in developing the agenda.

#### Recommendation

## Government's response

## Information to support adaptation

Working with other federal 2.56 departments and agencies producing or using information needed for adaptation efforts and with other levels of government and stakeholders, Environment Canada and Natural Resources Canada should

- identify and fill gaps in the needed information, including results of impacts and adaptation research and results from climate science; and
- identify the demand for initiatives that provide decision makers with access to information and technical expertise on adaptation tailored to their needs. Based on that work, they should strengthen existing initiatives and establish others, as required. (2.32 - 2.55)

Departments' response. Environment Canada and Natural Resources Canada recognize the need to work with other departments and agencies within the federal government and will continue to do so, to identify information needed for adaptation efforts. Both departments recognize the necessity to consult users and decision makers, in particular other levels of government and stakeholder organizations across Canada.

The recommendations of the Commissioner of the Environment and Sustainable Development will be considered by the Government of Canada in developing its Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions.

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## Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—2006

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2006



Report of the
Commissioner of the
Environment and
Sustainable Development
to the House of Commons

Chapter 3
Reducing Greenhouse Gases Emitted
During Energy Production and Consumption



Office of the Auditor General of Canada



## 2006



Report of the

# Commissioner of the Environment and Sustainable Development

to the House of Commons

#### Chapter 3

Reducing Greenhouse Gases Emitted During Energy Production and Consumption



Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.



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## Chapter

3

Reducing Greenhouse Gases Emitted During Energy Production and Consumption

The audit work reported in this chapter was conducted in accordance with the legislative management of the Auditor General of Canada. These policies and practices embrace the standard Institute of Chartered Accountants.	andate, policies, and practices of the ds recommended by the Canadian
Institute of Charterea Accountants.	

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## Reducing Greenhouse Gases Emitted During Energy Production and Consumption

#### **Main Points**

What we examined

Natural Resources Canada (NRCan) is the department that receives the majority of the federal funds aimed at reducing greenhouse gas emissions. It is responsible for implementing federal energy policies and for most federal programs intended to reduce greenhouse gas emissions from energy production and consumption in Canada. The Department is accountable for delivering reductions in greenhouse gas emissions through its policies and programs.

We looked in detail at three NRCan programs that each received \$100 million or more in federal funding earmarked for climate change programs. They provide examples of different areas where NRCan supports efforts to reduce greenhouse gas emissions: the Wind Power Production Incentive (renewable energy), the EnerGuide for Existing Houses program (energy efficiency), and the Ethanol Expansion Program (renewable fuels). We examined what greenhouse gas emission reductions the three programs have achieved, what they have cost, and how the Department monitors and reports on program results and spending. We also examined to what extent NRCan has learned from experience and taken steps to reduce risks in managing its programs. (Near the end of our audit, one of these programs, EnerGuide for Existing Houses, was discontinued).

Finally, we looked more broadly at other emission reduction efforts in the oil and gas sector, and the areas of wind power and home energy efficiency to see whether the Department can demonstrate what its programs and other activities have contributed to the emission reductions targeted in the federal government's plans for addressing climate change.

Why it's important

Energy production and consumption account for more than 80 percent of the greenhouse gas emissions in Canada. And compared with 1990, emissions have risen considerably, largely due to the production and consumption of fossil fuels like oil, natural gas, and coal.

In almost every aspect of their daily lives, Canadians need energy in the form of fuel, electricity, or heat. The national economy also depends on the production of energy, both for domestic use and for export. However, producing and consuming non-renewable energy releases pollutants into our air, water, and soil. Among those pollutants are greenhouse gases, which governments of many countries, including Canada, have formally linked to climate change.

Changing the way Canadians produce, distribute, and consume energy is therefore critical. As part of its response to climate change, the federal government has announced billions of dollars to support actions aimed at reducing emissions from major Canadian sources.

#### What we found

- Each of the three programs we examined in detail was funded to reduce greenhouse gas emissions, and they have made progress. As of March 2006, spending on the programs had achieved about 22 percent of the 4.8 million-tonne reduction that NRCan expected the programs to achieve by 2010. However, emission reduction targets for these programs were confusing, making it difficult to determine the actual results that were expected. Further, NRCan did not consistently report publicly on how these programs performed against emission reduction and other targets, making it difficult to hold the Department to account for its results.
- The Wind Power Production Incentive has stimulated investment in Canada's wind power industry during its infancy. The program has made progress toward its targets for electricity generation and greenhouse gas emission reduction, though less than anticipated.
   NRCan is adjusting the program based on lessons learned, to be ready should additional funds be approved. The Department has yet to lead the establishment of a long-term strategy for wind power in Canada, identifying where governments can be most effective.
- Oil and gas production, particularly the rapid development of Canadian oil sands, is significantly increasing greenhouse gas emissions. Yet few federal efforts are underway to reduce these emissions, and those efforts have had minimal results to date. For its part, the federal government is counting on regulatory and long-term technological solutions to achieve future reductions in this sector. However, it is not leading the way by clearly stating how and to what degree Canada will reduce greenhouse gas emissions when oil and gas production is expected to increase.

The Department has responded. Natural Resources Canada generally agrees with the recommendations in this chapter. However, in some circumstances, we note that its response does not fully indicate what action it intends to take and the timing for doing so.

#### Introduction

## Energy, sustainable development, and climate change

For a detailed description of the climate change issue, please consult **The Commissioner's Perspective**, which includes a section called **Climate Change—An Overview**.

3.1 Energy represents a major sustainable development challenge for Canada. Canadians use it to heat their homes, power their lights, computers, and appliances, commute to and from work, and travel. Canadian businesses need energy to manufacture and distribute their goods, and the economy depends on it. But Canada's latest greenhouse gas inventory shows that the production and consumption of energy is also responsible for more than 80 percent of Canada's greenhouse gas emissions.

#### **Energy and Sustainable Development**

Sustainable development requires us to examine the present mix of energy production in Canada; to develop new, more environmentally benign energy technologies; to use energy more efficiently; and to ensure that the generations that follow enjoy an equally secure energy future and unimpaired environmental quality.

Source: Energy and Sustainable Development: A Canadian Perspective, Government of Canada, 2001

- 3.2 Canada's energy future is facing several challenges, including
  - rising energy prices,
  - the adequacy and reliability of the electricity supply,
  - the availability and affordability of renewable energy sources,
  - · high demand for energy exports, and
  - energy-related air pollution and its impact on the health of Canadians.
- 3.3 Transforming the way Canadians produce, distribute, and consume energy is key to addressing greenhouse gas emissions and climate change. It involves many players, including the federal and provincial governments, which share jurisdiction over energy, as well as the private sector and individual Canadians. The federal government's goals for reducing greenhouse gases emitted during energy production and consumption are contained in its climate change plans (Exhibit 3.1).

#### Natural Resources Canada: The federal lead for energy

3.4 The federal government's mandate with respect to energy includes interprovincial and international aspects of energy resource management, trade and commerce, transboundary environmental protection as well as policies of national interest, such as economic development, security of the energy supply, and federal research and development.

- with primary responsibility for energy. As part of its mandate, NRCan is expected to co-ordinate, promote, recommend, and implement energy policies, as well as undertake programs and activities pursuant to those policies. The Department is expected to do so in co-operation with provincial and territorial governments, while considering the sustainable development of Canada's natural resources. Its efforts focus on energy efficiency, renewable energy, energy in transportation, and energy research and development. NRCan uses a range of approaches including providing grants and contributions, disseminating information, and regulating industry.
- 3.6 NRCan received the majority of funds allocated to federal government departments for programs to address climate change. This funding exceeded \$1.5 billion from 1997 to 2006 for NRCan. At the time of our audit, NRCan was responsible for more than 30 programs aimed at reducing greenhouse gas emissions.

Exhibit 3.1 Programs included in this chapter are linked to federal climate change plans

Action Plan 2000 (October 2000)	Climate Change Plan for Canada (November 2002)	Project Green (April 2005)
This plan set out a package of initiatives to take Canada one third of the way to its Kyoto target. It aimed at key sectors and included initiatives in areas such as transportation, energy, and buildings.	This plan's goals were to help Canadians become efficient energy producers and consumers. The 2002 plan promoted Canadian leadership in developing new and cleaner technologies, and identified a broad range of actions based on the earlier 2000 plan.	This plan built on the two previous plans. Its goals were to help mobilize Canadians around Canada's Kyoto commitments, and help transform the economy while maintaining our competitiveness.
The following programs are i	ncluded in this chapter and are linked to the goals of the f	ederal climate change plans
Canadian Industry Program for Energy Conservation	Canadian Industry Program for Energy Conservation	Carbon Dioxide Capture and Storage Initiative
Carbon Dioxide Capture and Storage Initiative	Carbon Dioxide Capture and Storage     Initiative	EnerGuide for Existing Houses     Equipment program
EnerGuide for Existing Houses	EnerGuide for Existing Houses	Large Final Emitter System
EnerGuide for New Houses	EnerGuide for New Houses	Purchase of Electricity from
Equipment program	Equipment program	Renewable Resources
Ethanol Expansion Program	Ethanol Expansion Program	Wind Power Production Incentive
Market Incentive Program	Large Final Emitter System	
Purchase of Electricity from Renewable Resources	Market Incentive Program	
	Purchase of Electricity from Renewable Resources	
	Wind Power Production Incentive	

#### Challenges facing Canadian energy policy

- 3.7 The biggest challenge facing Canadian energy policy is balancing the need to reduce greenhouse gas emissions with the need to maintain energy production and exports and meet growing consumption, according to a 2004 review of Canadian energy policies conducted by the International Energy Agency. The Agency also noted a need for intensive talks between the federal and provincial governments to reach national energy policy goals.
- 3.8 Related to this challenge, the federal government sought advice from the National Round Table on the Environment and the Economy on a long-term strategy on energy and climate change. In addition, the Canadian Council of Energy Ministers is working collaboratively to ensure continued prosperity from Canada's energy resources and to enhance the security, reliability and sustainability of Canada's energy systems. Both industry and non-governmental organizations have called for a Canadian energy strategy or framework.

#### National Round Table on the Environment and the Economy

The National Round Table on the Environment and the Economy was created by the Prime Minister in 1988 as an independent advisory body reporting to the federal government. Its status was formalized in a 1993 Act of Parliament. It is dedicated to exploring new opportunities to integrate environmental conservation and economic development, in order to sustain Canada's prosperity and secure its future. Appointed by the Governor in Council on the recommendation of the Minister of the Environment, its members are distinguished leaders in business and labour, universities, environmental organizations, Aboriginal communities, and municipalities.

In June 2006, the Round Table released its advice to the federal government on a long-term strategy on energy and climate change. It noted that significant greenhouse gas emission reductions could take place in Canada by mid-century only if energy is used more efficiently and if it is produced while emitting less carbon. It pointed to the need to increase energy efficiency, to perfect carbon capture and storage, and to transform electricity generation to clean coal technology, co-generation, and renewable energy, particularly wind power.

#### Focus of the audit

- **3.9** We looked in detail at three of NRCan's programs to reduce greenhouse gas emissions:
  - the Wind Power Production Incentive (WPPI),
  - the EnerGuide for Existing Houses progam (EGH), and
  - the Ethanol Expansion Program (EEP).

These programs have a high public profile, and each received \$100 million or more in federal government funding earmarked for climate change programs. Our choice of programs was also influenced

by the variety they presented in terms of departmental approaches to reducing greenhouse gas emissions, covering renewable energy, energy efficiency, and alternative transportation fuels. A significant increase in funding for WPPI was announced in 2005, though it received approval for only a portion of it by the end of our audit. Furthermore, though a quadrupling of funds for the EGH program had also been announced, the program was discontinued near the end of our audit.

- **3.10** We also examined more broadly other programs aimed at reducing greenhouse gas emissions and related to
  - · developments in the oil and gas sector,
  - advancements in wind power as a renewable and clean source of electricity, and
  - improvements in the energy efficiency in homes.
- 3.11 We also assessed a selection of federal commitments related to energy and greenhouse gas emission reductions found in NRCan's 2004 sustainable development strategy. (Chapter 4, Sustainable Development Strategies, summarizes and presents these assessments.)
- **3.12** More details on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

#### Observations and Recommendations

**3.13** To provide an overview of the programs examined in this chapter and their greenhouse gas emission reduction targets and results, summaries have been prepared (Exhibits 3.2, 3.3).

Exhibit 3.2 Targets, results, and spending for programs examined in detail in this chapter

Program	Greenhouse gas emission reduction targets (Mt/yr) by 2010	Greenhouse gas emission reduction results (Mt/yr) as of 31 March 2006	Total spent as of 31 March 2006 (\$ millions)
Wind Power Production Incentive	0.9	0.36	21.3
EnerGuide for Existing Houses (discontinued in 2006)	2.2	0.7	103.8
Ethanol Expansion Program (one plant operating as of February 2006)	1.7	_	62.2
Total	4.8	1.06	187.3

Exhibit 3.3 Targets and results for other programs included in this chapter

Program	Greenhouse gas emission reduction targets (Mt/yr)	Greenhouse gas emission reduction results (Mt/yr) as of 31 March 2006
Purchase of Electricity from Renewable Resources	0.235 by 2006	0.025 (as of March 2004)
Market Incentive Program	0.5 by 2006	0.22
EnerGuide for New Houses	0.3 by 2010	0.26
Equipment Program		
entire program	2.8 by 2010	0.62
for the housing sector	None specified	0.52
Canadian Industry Program for Energy Conservation		
entire program	5.8 by 2010	1.33
<ul> <li>for the oil and gas sector</li> </ul>	None specified	0.04
Carbon Dioxide Capture and Storage Initiative	3.5 by 2006	0.08
Large Final Emitter System (not operational until 2008)		
entire system	45 by 2010	-
for the oil and gas sector	20 by 2010	-

Note: Numbers are rounded.

## Renewable electricity from wind power

#### Wind power reduces greenhouse gas emissions

- **3.14** Wind power is a renewable form of energy that does not emit greenhouse gases while it produces electricity. It affects greenhouse gas emissions indirectly by displacing the electricity and emissions that would have been generated by other means, such as coal-fired or natural gas electricity-generating plants.
- **3.15** Another benefit of generating electricity by wind power is its contribution to securing a competitively priced supply of electricity. The National Energy Board (NEB) is an independent federal regulatory agency reporting to Parliament through the Minister of

Natural Resources. It has projected that electricity demand could exceed supply in some regions of Canada as early as 2007 if steps are not taken. The NEB concluded that renewable resources such as wind power are playing an increasingly important role in addressing the adequacy of Canada's electricity supply.

#### How wind power works

Most wind-generated electricity is created with wind turbines that are essentially giant windmills. The key components of modern wind turbines are rotor blades, some nearly half a football field in length, an electrical generator, and a tower. The wind blowing against the blades causes them to move. This movement turns a main shaft connected to a generator, which produces the electricity. The electricity produced by wind turbines is fed to consumers through the electricity distribution systems that public utility companies operate.

#### The Wind Power Production Incentive has stimulated investment

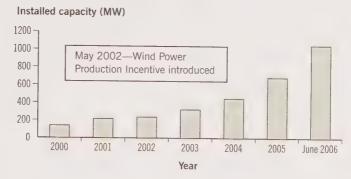
- 3.16 To support wind power directly, NRCan introduced the Wind Power Production Incentive (WPPI) program in May 2002 to encourage the production of electricity primarily from large wind turbines. WPPI began as a \$260-million multi-year program that provides a financial incentive to wind farm owners for the electricity their projects produce. The incentive averages 1¢ for every kilowatt-hour (kW-h) of electricity produced during the first 10 years of a project's operation and is intended to help offset the higher cost of producing electricity from wind power. The program's targets are an annual production of 2.6 terawatt-hours (TW-h) of electricity and the installation of new turbines with a combined wind power capacity of 1,000 megawatts by 2007. The annual greenhouse gas emission reduction target for WPPI is currently 0.9 million tonnes (Mt) by 2010.
- 3.17 In Budget 2005, the federal government announced that it was expanding the program's multi-year funding to \$1.18 billion. The corresponding targets to be achieved by 2010 would increase to an annual electricity production of 10.5 TW-h and a total installed wind power capacity of 4,000 megawatts, should this expanded funding be approved. By the end of our audit, interim funding of \$69.9 million had been approved for WPPI, though the remainder of its expanded funding from Budget 2005 was not yet approved.
- **3.18** WPPI is one of several public and private initiatives that have contributed to the growth in installed wind power capacity in Canada (Exhibit 3.4). Though NRCan and others cannot attribute this growth to specific initiatives like WPPI, we found broad-based support for the

#### Did you know?

- A watt is a unit of power, and a watt-hour represents the amount of energy produced or consumed by a one-watt device in one hour This provides a measure of energy production and consumption, such as for power plants and home appliances
- Multiples are typically used when expressing watt-hours, such as kilowatt-hours (kW-h) for one thousand watt-hours, megawatt hours (MW-h) for one million, gigawatt-hours (GW-h) for one billion, and terawatt-hours (TW-h) for one trillion
- The WPPI program target of generating 2.6 TW-h of electricity per year by wind power is enough to meet the annual needs of about 260,000 homes

program and clear statements from provincial governments, companies and utilities about WPPI's influence on their decisions to invest in or support wind power projects.

Exhibit 3.4 Total installed wind power capacity in Canada is growing



Source: Based on information provided by the Canadian Wind Energy Association

#### The Wind Power Production Incentive is progressing toward its targets

3.19 Based on our review of WPPI financial data, authorized funding from its initial and expanded budgets was \$329.9 million (April 2002 to March 2006). By March 2006, NRCan had committed \$299.7 million to 22 signed projects. Eighteen of the projects were commissioned, producing electricity, and receiving the incentive. The remaining four projects were in development. NRCan spent \$21.3 million of this funding, including \$19.0 million paid to project proponents under the terms of signed contribution agreements. Firm commitments to future payments amount to \$278.4 million (Exhibit 3.5). A total of 1 TW-h of electricity was produced by WPPI-supported projects in the year ending March 2006, equivalent to an annual greenhouse gas emission reduction of 0.36 million tonnes.

3.20 NRCan reported in a 2005 discussion document on WPPI that operating wind farms were producing about 20 percent less electricity than expected in the signed contribution agreements. The Department has stated that the program will not meet its initial target for electricity production if this trend continues. Since greenhouse gas emissions are directly related to the amount of electricity produced, the emission target may not be met either. In terms of the initial program target of 1,000 megawatts for installed wind power capacity, the projects supported by WPPI's initial funding represent a total capacity of 729 megawatts. This number increased to 924 megawatts by March 2006 after additional projects received commitments based on WPPI's expanded funding.



A wind farm on Mont Miller in Quebec.
Photo: Natural Resources Canada

Exhibit 3.5 Financial information as of 31 March 2006 on the three programs examined (\$ millions)

Program	Total authorized funding	Payments for grants and contributions	Payments for other operating expenses	Committed to grants and contributions	Total spent and committed
Wind Power Production Incentive	329.9	19.0	2.3	278.4	299.7
EnerGuide for Existing Houses (discontinued in 2006)	452.2	37.1		-	103.8
program administrative costs			24.5		
payments to contractors for home evaluations			42.2		
Ethanol Expansion Program	100.0	61.7	0.5	20.5	82.7
Totals	882.1	117.8	69.5	298.9	486.2

Source: Based upon financial data provided by Natural Resources Canada.

- 3.21 Meeting program targets is not assured because the Department and the wind farm developers agreed in the signed contribution agreements to electricity production levels that were over-estimated. NRCan committed its funds on the basis of these levels. Since payments are for electricity actually produced, some funds may lapse and not be available for additional new projects. Our audit found that \$2.3 million had lapsed by 31 March 2006. More will lapse if electricity production levels continue to fall short.
- 3.22 NRCan's 2005 discussion document was used to consult with stakeholders on improvements to the program, should it be expanded. The document identified issues and options for dealing with them, many based on the experience gained in implementing the program during its first funding period. The Department intends to revise WPPI's terms and conditions to incorporate the lessons learned (for example, estimates of production levels).
- 3.23 In addition, during the course of our examination, NRCan conducted an internal audit of this program's financial and management controls. The recommendations and management responses relate to issues with program design, financial management, and program administration (Exhibit 3.6).

#### The wind power sector in Canada is changing

3.24 In 2002, when WPPI began, there were few wind farms in Canada and little investment or experience in operating them. Also, with a relative abundance of electricity in Canada, there was no pressing need

#### Wind power in two leading countries

In Germany and Denmark, wind power has emerged in the last 20 years as a key source of electricity. These countries experienced a pressing need to find alternative energy sources to generate electricity. They became leaders in wind power through national policies such as legislated requirements to purchase windgenerated electricity. They also have an adequate wind resource, encourage research and development, and are home to leading wind turbine manufacturers.

to use wind power, as there was in other countries. Though the provinces have a major role in encouraging large wind farms, they were not heavily engaged in wind power at that time (Exhibit 3.7).

3.25 Since 2002, some important changes have occurred in Canada's wind power industry. Installed wind power capacity has grown, as has government and industry experience with wind power. Costs associated with wind power have changed: some have decreased while others increased. Several provinces have become more engaged and are offering large contracts for new wind power projects. This has resulted in requests from some provinces for improved co-ordination between WPPI and their own efforts.

Exhibit 3.6 Main elements of the 2006 NRCan internal audit of the Wind Power Production Incentive

Internal audit recommendations	Management responses
Modify the capacity factor [the projected productivity of a wind farm] to an acceptable level (for example, 30 percent), or include a clause in the agreements to allow for reduction of eligible amounts in cases where production levels are not expected to be met.	Under an expanded program, the capacity factor will be fixed to a reasonable level and reflected in the terms and conditions of the program.  Timing: by September 2006
Clarify information available to the public on the costs of applying to the program, including environmental and technical costs.	The cost of applying to the program is minimal. However, the costs of developing a wind farm are extremely high because its development requires regulatory approvals, the purchase of expensive equipment; and depending on the size of the project; an environmental assessment. The program's documentation will include information on the range of costs associated with the development of a wind farm as a function of \$/MW of installed capacity.  Timing: by September 2006 and updated by March 2010.
Improve budget management, accounting, and reporting practices by providing training and assessing available tools.	The program will work with the sector's financial advisor to identify opportunities for training program administrative personnel in the area of financial management and to use existing General Financial System tools.  Timing: by March 2007
Prepare a resource plan for immediate and future needs of the WPPI program, including monitoring environmental assessments, security of confidential information, and accommodation.	A resource and accommodation plan will be developed in the context of the expanded program.  Timing: accommodation plan by July 2006 and resource plan by September 2006.

Source: Natural Resources Canada

Exhibit 3.7 Installed wind power capacity in the provinces and territories

Province/territory	Installed capacity prior to April 2002 (MW)	Total installed capacity by June 2006 (MW)
Alberta	92.9	284.4
Ontario	3.1	220.7
Québec	102.0	212.3
Saskatchewan	17.1	171.2
Manitoba	0	104.0
Nova Scotia	0	41.5
Prince Edward Island	5.3	13.6
Yukon	0.8	0.8
Newfoundland and Labrador	0	0.4
British Columbia	0	0
New Brunswick	0	0
Northwest Territories	0	0
Nunavut	0	0
Total for Canada	221.2	1,048.9

Note: Numbers are rounded

Source: Based on information provided by the Canadian Wind Energy Association

#### Where the wind blows

Environment Canada maintains an atlas of wind energy in Canada based on more than 40 years of collected data. Planners of wind power projects draw on this atlas to evaluate areas with the greatest wind potential and to justify more in-depth analysis of specific wind resources

3.26 A wind power strategy for Canada reflecting these changes does not exist to guide the co-ordination of government efforts and decisions about programs, their role, and funding. NRCan reported publicly that it has started developing a discussion paper supporting such a strategy. Though it committed to consulting on this paper by early 2006, it has not yet done so.

**3.27 Recommendation.** Natural Resources Canada should lead the development of a wind power strategy for Canada, in collaboration with the provinces and wind industry. The strategy should provide a vision for wind power in Canada and identify what governments will do to support it, and over what timeframe.

Natural Resources Canada's response. The federal government is currently assessing its program, the Wind Power Production Incentive, which provides direct support for wind energy development in Canada. Should the government elect to continue a major initiative of this type, Natural Resources Canada would take a leadership role by complementing this with actions to develop a comprehensive framework for supporting wind energy development in Canada, in collaboration with the wind energy industry, and with other federal

departments and levels of governments. To that end, the government would complete and engage in consultations on a discussion paper regarding an enabling policy framework for wind energy development in Canada.

#### The evaluation of programs supporting wind power production is incomplete

- 3.28 In addition to WPPI, the federal government has several programs to support wind power. Wind power projects benefit from tax incentives that have been introduced over time to encourage investment in energy efficiency and renewable energy. Under these provisions, wind turbines became eligible for accelerated capital cost allowance in 1986. Since 1996, start-up expenses of renewable energy projects, including the cost of test wind turbines, have been immediately deductible or eligible for financing using flow-through shares. The federal government has not evaluated the performance of these measures.
- 3.29 In 1997, the federal government took a first step to purchase electricity from emerging renewable energy, including wind power, which led to the Purchase of Electricity from Renewable Resources (PERR) program. The federal government signed four contracts supporting wind power projects between 1997 and 2001. Chapter 5, Environmental Petitions, presents the results of our audit involving the PERR program and what actions the federal government has taken toward purchasing renewable energy and helping develop markets for it. It notes that the federal government has not undertaken a program evaluation of PERR.
- 3.30 In 2002, the Market Incentive Program (MIP) for Distributors of Electricity from Emerging Renewable Energy Sources was launched to stimulate markets for renewable electricity such as wind power by providing incentives to electricity distributors to encourage their residential and small business customers to buy renewable electricity. According to a 2004 NRCan study evaluating the program, uptake of the incentive by electricity distributors faced several challenges, the main one being unfavourable conditions for renewable energy sources when competing in retail electricity markets. Since performance was poor, the federal government announced that funding for MIP would not be renewed and the program will be wound down by March 2007.
- **3.31** In the case of WPPI, the Department committed in 2002 to complete a formal program evaluation by March 2006 to address such things as program relevance, design, and delivery, as well as success in achieving its objectives. In our opinion, the program discussion

document and the internal audit NRCan has conducted represent substantive steps toward the formal evaluation, but the Department has not addressed all aspects. Furthermore, since the WPPI is based on a need to counterbalance what have been higher costs of wind-generated electricity, it is our view that a current, thorough economic analysis is warranted. Such an analysis could clarify the extent to which the economics of wind power have changed across Canada and the role that WPPI needs to play in support of wind power. An economic analysis could also support the development of a strategy for wind power in Canada.

**3.32** Recommendation. Natural Resources Canada should complete the evaluation of the Wind Power Production Incentive that it committed to in 2002. It should also complete a thorough economic analysis to clarify the extent to which the economics of wind power are changing across Canada and whether there are implications for this program.

Natural Resources Canada's response. Natural Resources Canada agrees with the recommendation and will undertake an evaluation in fiscal year 2008–09. The Department will continue to work with the wind energy industry to monitor economic factors related to the development of wind power in Canada. The Department will also collaborate with the wind industry in assessing the economics of wind power and the potential implications for possible federal initiatives in the future.

## Dayy Millson y In Comme

### Housing programs have reduced energy consumption

- 3.33 NRCan has a mandate to strengthen and expand Canada's commitment to energy efficiency in order to help address the challenges of climate change. To do so, it relies on a variety of instruments that range from information programs to regulation. It is implementing programs aimed at reducing energy use in existing and new houses, and appliances and other equipment. These programs are described below.
- 3.34 NRCan introduced the EnerGuide for Existing Houses program to improve the energy efficiency of existing houses, reduce their consumption of heating fuel and electricity, and thereby reduce greenhouse gas emissions. It had two components: subsidized home evaluations introduced in 1998; and grants for renovations introduced late in 2003. Home evaluations provided homeowners with expert advice, at roughly half the normal cost, on how to make their houses more energy efficient. Homeowners received a personalized report

#### Did you know?

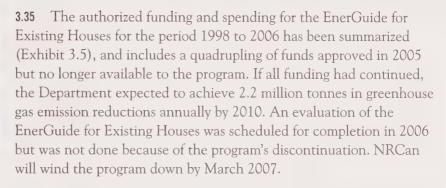
- Based on Canada's last published census in 2001, there were 11.6 million dwellings in Canada, home to almost 30 million people.
- Canadian households use energy primarily for space and water heating, appliances, lighting,
- The use of this energy contributes to greenhouse gas emissions, accounting for 77 Mt in 2004 when electricity use is included.

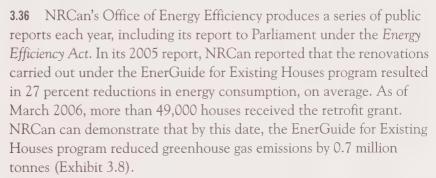
containing their EnerGuide for Houses rating and recommendations and supporting information on retrofitting their homes. The second component provided grants to homeowners after they completed their renovations and had a second evaluation of their home's EnerGuide for Houses rating. Near the end of our audit, the EnerGuide for Existing Houses program was discontinued.

#### **EnerGuide for Houses Ratings**

Home evaluations estimate the total energy consumption of a dwelling by conducting various on-site measurements, including air leakage and insulation, and by using standard energy use conditions and background weather data for the locality. This estimate is expressed as an EnerGuide for Houses rating on a scale of 100. After renovations take place, a second evaluation determines the improvement in energy consumption.

NRCan used the change in rating to determine the size of the grant that it would provide to homeowners to help offset the cost of their renovations. A number of provinces and public utility companies also use it for similar purposes.





3.37 In addition to existing houses, NRCan has implemented an EnerGuide for New Houses program, building on a program that dates back to 1982. The program aims to reduce emissions by encouraging the home construction industry to build, and consumers to purchase, more energy-efficient houses. NRCan proposes building standards for use by the provinces and promotes technologies for use in the design of new houses. According to the Department, this program is expected to



Source: Natural Resources Canada



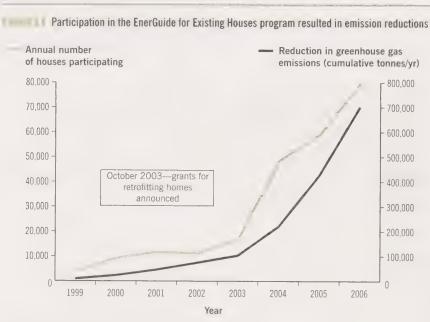
A homeowner receiving advice from an energy consultant about how to improve the energy efficiency of her home.

Photo: Natural Resources Canada

NRCan's equipment program has several components related to equipment regulation, labelling, and promotion, each with its own name. The name of the program has also evolved over the years. We are referring here to the generic equipment program, which includes all of the components

contribute greenhouse gas emission reductions of 0.3 million tonnes annually by 2010. By March 2006, the program had reduced emissions by 0.26 million tonnes.

3.38 As well, NRCan has implemented an equipment program that establishes more energy efficient standards for residential, industrial, and commercial equipment including household appliances. It also rates their energy efficiency and requires equipment labelling. Doing so helps Canadians make energy-efficient choices when buying, selling, or manufacturing energy-using equipment. As of March 2006, NRCan estimates that this program achieved a total of 0.52 million tonnes per year of emission reductions in the housing sector.



Source: Based on data provided by Natural Resources Canada

## Natural Resources Canada is not reporting publicly about the performance of its housing programs against targets

- **3.39** NRCan's public reports contain a variety of information such as residential energy use, average energy savings and emission reductions per home, and percentage of appliances certified. However, these reports do not refer to targets, including expectations for greenhouse gas emission reductions, and results are not presented in a way that explains program performance.
- 3.40 Using the EnerGuide for Existing Houses program as an example, the Department's 2005 report to Parliament presents many of the numbers needed to estimate the program's performance against its

long-term emission reduction target. However, neither the target nor an indication of progress toward it is included. Based on what we examined, NRCan could supply this information for its housing programs. In our view, it is important to do so to help Canadians understand the contribution that programs are making to the federal government's climate change objectives. Later in this chapter (paragraph 3.66), we make a recommendation to this effect that applies to the programs we examined, including housing programs.

#### The Cthanol Cypansina Program

#### Did you know?

Vehicles made after 1980 can use a 10 percent ethaun, bleep within it inocific it is an disease. However, most vehicles require modifications to use gasoline blended with more than this amount.



An ethanol production plant in Ontario.

## Ethanol in vehicle fuel is part of the federal government's efforts to reduce greenhouse gas emissions

- 3.41 Chapter 1, Managing the Federal Approach to Climate Change, notes the importance of the transportation sector to climate change since it accounted for about 25 percent of the greenhouse gases emitted in Canada in 2004. Changing vehicle fuel mix by blending in ethanol is a strategy for reducing emissions associated with this sector. NRCan has calculated that gasoline blended with 10 percent ethanol produced from corn or wheat reduces greenhouse gas emissions by about 4 percent compared with normal gasoline, even accounting for the energy required to grow the grain. In 2004, roughly 0.2 billion litres of ethanol were produced at existing facilities, enabling 5 percent of the national gasoline supply to be blended with 10 percent ethanol content.
- **3.42** The federal government's Action Plan 2000 began pursuing this fuel mix strategy. It set a target to increase Canada's ethanol production capacity so that 25 percent of the national gasoline supply could contain a 10 percent blend of ethanol by 2010. In 2002, it increased the target to 35 percent.
- 3.43 In October 2003, NRCan launched the multi-year Ethanol Expansion Program (EEP) with total climate change funding of \$100 million. These funds were intended to offset some of the costs of constructing or expanding Canadian facilities to produce fuel grade ethanol. The funds provided by NRCan may be repayable, and the terms and conditions of the contribution agreements with individual companies indicate where this is required.
- 3.44 NRCan has publicly announced its intention to support eleven projects under the EEP. It approved contributions worth \$72 million for six projects under the first round of funding in 2004. In a second round of funding in 2005, five additional projects were identified that are worth \$46 million. NRCan reports that the commercial costs of all projects total nearly \$900 million, demonstrating that EEP contributions spurred significant private sector investments. As of

## Did you know?

Several other countries invested in ethanolblended fuels a number of years ago for a variety of reasons, including to increase security of their energy supplies, improve air quality, particularly in cities, improve the rural economy, and combat climate change. As the world's leaders in fuel grade ethanol, Brazil and the United States each produced about 16 billion litres in 2005

#### Did you know?

- The federal government exempted ethanol from the federal excise tax on gasoline in 1992
- Alberta, British Columbia, Manitoba, Ontario. Quebec, and Saskatchewan have similar exemptions from provincial fuel tax
- In addition, three of these provinces (Manitoba, Ontario, and Saskatchewan) are enacting regulations requiring that ethanol be blended in a minimum amount of the gasoline supply

March 2006, the Department had made \$61.7 million in contribution payments (Exhibit 3.5). Before the end of our audit work, one of the plants receiving EEP contributions was fully constructed and producing ethanol.

## The Ethanol Expansion Program contributes to federal ethanol goals but lacks its own targets

- 3.45 Although the federal government was clear in 2000 and 2002 that it was setting out to increase the amount of ethanol available for blending into the national gasoline supply, departmental officials have indicated that specific targets for ethanol production volume and greenhouse gas emission reductions were not set for the EEP when funding was authorized. They claim the program adopted the ethanol goals of the federal government's first two climate change plans as the program's implied targets. NRCan estimates the volume of ethanol that the EEP-supported projects could produce amounts to 1.2 billion litres, enough to meet these goals. As well, the Department has calculated that this volume of ethanol is equivalent to an annual greenhouse gas emission reduction of 1.7 million tonnes if all projects proceed as planned.
- 3.46 It is our view that not setting clear targets for this program hinders accountability and the public's ability to conclude whether the program will contribute as expected to climate change plans. This observation is consistent with a 2006 internal audit's recommendations that called for a more current and specific Accountability Framework and performance reporting, particularly on the program's contribution to reducing greenhouse gas emissions. In response, the Department committed to developing and reporting on targets, although it has yet to do so. Later in this chapter (paragraph 3.66), we make a recommendation to this effect that applies to the programs we examined, including the EEP.

#### Future financial risks exist for the program

3.47 A recent internal audit found that the management approach and financial systems currently in place for the EEP are sufficient for now. However, it noted that better management would be necessary throughout the 10-year period covered by the contribution agreements. Resources, roles, and responsibilities for managing the program's future performance and repayment-related information have not been clearly defined and documented. In our view, failure to ensure future repayments when required by the contribution agreements is a risk that

should be averted. In responding to the internal audit, program management committed to addressing this risk.

#### A new fuel initiative has been put forward

3.48 The federal government announced in 2006 a new initiative to increase the average renewable fuel content in Canada's gasoline and diesel fuel supply to 5 percent by 2010. This commitment differs from the federal ethanol goals being pursued by NRCan through the EEP because it focuses on renewable fuels which include more than ethanol (for example, biodiesel). Also, it applies to all of the vehicle fuel supply, which includes diesel fuel.

## Reducing emissions from the oil and gas sector

#### Did you know?

- In 2004, Canada exported two and a half times more oil and gas than it did in 1990.
- Oil and gas represent over 90 percent of Canada's energy exports.
- Canada has been the largest foreign supplier of crude oil to the United States for seven consecutive years, from 1999 to 2005.
- Since 1990, over 28 percent of the increase in Canada's total greenhouse gas emissions is attributable to exports of oil and gas.

Oil sands—Generally a mixture of bitumen, sand, and clay. Bitumen is a naturally occurring viscous mixture of hydrocarbons that contains high levels of sulphur and nitrogen compounds. In its natural state, bitumen is not recoverable at a commercial rate through a well because it is too thick to flow. It must either be mined or extracted by processes that generally involve heating the sand and the oil it contains to enable it to flow. Though the energy used to process each barrel of oil has decreased since 1990, two to four times more greenhouse gases are emitted per barrel by the processing of oil sands than by conventional drilling for crude oil.

#### Oil and gas production is a major source of emissions

3.49 Canada's oil and gas reserves are regionally distributed but are of national interest, economically and environmentally. The oil and gas sector contributed \$27.4 billion (or 2.3 percent) to Canada's Gross Domestic Product in 2004. Based on information provided by NRCan, over \$18 billion in royalties, taxes and other payments were received from this sector by federal and provincial governments in 2004. A major development in the oil and gas sector is the growth in the oil sands in Alberta, one of the world's largest oil reserves. The National Energy Board estimates that the capital expenditures associated with the construction of oil sands development projects over the period 2006 to 2015 will total about \$95 billion. The National Energy Board also estimates that oil sands production will grow from 1.1 million barrels per day in 2005 to 3.0 million barrels per day by 2015.

3.50 Oil and gas activities, including mining (of oil sands), production, refining, and transport, accounted for 152 million tonnes of greenhouse gases emitted in 2004, a 51 percent increase compared to 1990. With the rapid development of Canada's oil sands, greenhouse gas emissions in this sector are expected to grow. The contribution that expanded oil sands operations will make to annual greenhouse gas emissions could double between 2004 and 2015.

#### **Emission reductions are minimal to date**

3.51 We asked NRCan to identify all federal government programs aimed at reducing greenhouse gas emissions from the oil and gas sector. The Department identified three programs: the Canadian Industry Program for Energy Conservation, the Carbon Dioxide Capture and Storage Initiative, and the Large Final Emitter System. It also identified a number of technology research and development activities,

such as the Bitumen and Heavy Oil Program, which have a potential to reduce greenhouse gas emissions in the future.

3.52 The Canadian Industry Program for Energy Conservation (CIPEC) was created in 1975 as a voluntary partnership between the Government of Canada and industry to encourage energy efficiency actions to improve industrial productivity and cut costs. It focuses on all industries, including mining, manufacturing, construction, and electricity generation, as well as upstream oil and gas and oil sands. We found that formal participation by the oil and gas sector in the CIPEC voluntary program was stalled when the sector faced impending regulation controlling greenhouse gas emissions under the Large Final Emitter System. Actual participation was limited to individual companies that conduct energy audits and send staff to energy efficiency workshops. As of March 2006, NRCan estimates these companies achieved a total of 0.04 million tonnes per year of emission reductions as a result of their participation.

3.53 The Carbon Dioxide Capture and Storage Initiative was established in 2001 to advance the understanding and promote the commercialization of technology that captures carbon dioxide from industrial processes and stores it in geological formations. Total announced climate change funding was \$25 million, ending in March 2006. There are two main parts to the program: support for research aimed at establishing the feasibility of this technology, including an international storage and monitoring project in Weyburn, Saskatchewan and a financial incentive for projects demonstrating the technology's application in Canada. This program's target for reducing greenhouse gas emissions is 3.5 million tonnes annually by 2006 and applies only to the demonstration projects.

3.54 Research to establish the viability of carbon dioxide capture and storage in Weyburn is continuing. For the other part of the program, NRCan has agreements with companies for five demonstration projects and indicates that these projects will achieve less than the program's emission reduction target because their scale is smaller than anticipated. As of 31 March 2006, the initiative had achieved an annual emission reduction of 0.08 million tonnes. Large-scale deployment of this technology in Canada will depend on funding for the installation of pipelines and related infrastructure to move the carbon dioxide from its industrial source, where it is captured, to its destination storage site. Industry, the province of Alberta, and the Government of Canada are co-operating on this but have yet to commit the required funding.

#### Did you know?

Three types of geological formations have received extensive consideration for the geological storage of carbon dioxide:

- · oil and gas reservoirs.
- · deep saline formations, and
- · coal beds that cannot be mined

To geologically store carbon dioxide, it must be compressed into a fluid then injected into suitable deep rock formations.

#### Key emission reductions are being left to the future

- 3.55 In 2002, NRCan initiated work on a system to secure reductions in greenhouse gases emitted from several key industrial sectors, including oil and gas. It was to involve individual contractual agreements ("covenants") between the federal government and industry. Responsibility for this initiative, now called the Large Final Emitter System, was transferred to Environment Canada in 2005, before any agreements were reached with the oil and gas sector. Current plans for the system involve federal regulations for each of the sectors covered and other measures (Chapter 1, Managing the Federal Approach to Climate Change).
- 3.56 The overall greenhouse gas emission reduction target for the Large Final Emitter System has been reduced from 55 million tonnes in 2002 to 45 million tonnes in 2005. According to internal documents, roughly 20 million tonnes of this target are expected from the oil and gas sector annually by 2010. Since federal regulations are not expected to take effect until 2008, no greenhouse gas emission reductions are yet attributable to this system.
- 3.57 The federal government's technology research and development activities for the oil and gas sector are future oriented. They generate knowledge and develop technologies for the long term. We found that these activities have not yet established targets for reducing greenhouse gas emissions and minimal reductions have been achieved.

#### The main challenge with the oil and gas sector is not being addressed

- **3.58** In our view, the oil and gas sector exemplifies the sustainable development challenge of Canada's energy supply noted by NRCan, the International Energy Agency, and others. The nation's challenge is to reduce greenhouse gas emissions while oil and gas production for export and domestic consumption is expected to increase. The rapid expansion in oil sands development adds to this challenge.
- **3.59** Furthermore, each level of government has different constitutional powers related to energy, including oil and gas (Exhibit 3.9). In representing national interests, the federal government has a major role to play in coherently and transparently addressing this jurisdictional complexity.
- **3.60** NRCan, as the federal lead for energy, is developing an energy strategy. During a parliamentary hearing in June 2006, the Minister of Natural Resources stated that an energy strategy for Canada has been in the works for some time and that something concrete would be



Mining of Canada's oil sands.

Photo: Suncor Energy Inc.

Exhibit 3.9 Constitutional division of responsibilities for energy

Federal government	Provincial governments
Resource management on Canada Lands     Uranium/nuclear power	Development and management of resources within provincial boundaries
Interprovincial/international trade and commerce     Interprovincial and international works and undertakings	<ul> <li>Property and civil rights within the province, specifically pertaining to, for example, the environment, health, safety, land use, and consumer protection</li> </ul>
<ul> <li>Transboundary environmental impacts</li> <li>Policies and legislation in the national interest:</li> </ul>	<ul> <li>Regulation and legislative framework for electricity and natural gas, including ownership of Crown corporations engaged in these activities</li> </ul>
- economic development	Securing appropriate economic return as resource owner from Crown mineral rights
<ul><li>security of energy supply</li><li>federal energy research and development</li></ul>	Policies in the provincial interest, such as economic development, and energy science and technology
	Intraprovincial trade

Source: Based on Energy Policies of International Energy Association Countries—Canada 2004 Review, International Energy Association, 2004

available by the end of 2006. The Department has not yet given any indication of what its strategy might be to achieve immediate and longer term greenhouse gas emission reductions from the oil and gas sector. It will miss opportunities to tackle this important sector the longer it takes to develop and implement the strategy. In our view, it is important that NRCan, in consultation with the provinces and territories, develop this energy strategy together with an implementation plan soon.

**3.61** Recommendation. Natural Resources Canada, on behalf of the Government of Canada, should make clear to Parliament by the end of 2006 how and to what degree the country will reduce greenhouse gas emissions in the oil and gas sector, both in the immediate and longer term. At the same time, NRCan should develop a corresponding implementation plan.

Natural Resources Canada's response. Natural Resources Canada agrees that addressing the growth in emissions from the oil and gas sector is an important issue. The Department will work to see that the challenge posed by the link between energy production and use, and air emissions is considered as the Government of Canada develops its Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions.

#### Managing for an extinumed unations in deleasted programs

- 3.62 The federal government endorses the concept of "managing for results," which means departments need to focus on results in every aspect of management. Among other things, organizations that perform successfully are clear about what they want to achieve and how well they are achieving it. They issue public reports, making them more transparent and accountable. Managing these organizations for results involves a transition from basic awareness of the concept toward full implementation. In the Auditor General's 2000 Report, Chapter 20, Managing Departments for Results and Managing Horizontal Issues for Results, we found that managing for results was still not an integral part of departmental management in the federal government.
- 3.63 Because NRCan receives the majority of federal climate change funds to reduce greenhouse gas emissions, we expected the Department to manage its programs for this result. As such, it would publicly account for results achieved against clearly stated emission reduction targets, and the money spent. However, for the programs we examined in detail, we found that expectations were confusing and NRCan did not publicly and consistently report performance against them. This makes it difficult to hold the Department to account for results and the money spent.

#### Setting expectations and public reporting against them are not adequate

- **3.64** Our audit of the three programs we examined in detail identified the confusing nature of expectations regarding greenhouse gas emission reductions. This confusion stems from a lack of clarity and transparency about the actual targets that NRCan is accountable to achieve. To illustrate:
  - The emission reduction target for WPPI was adjusted several times, from 3 million tonnes to its current target of 0.9 million tonnes, but NRCan has not widely communicated this;
  - For the EnerGuide for Existing Houses program, funding was complex, leading to confusing targets. We found five Treasury Board decisions that authorized funds for the program and which did not clearly describe emission reduction results expected for this money; and
  - For the Ethanol Expansion Program, there was no specific program target against which the Department was being held accountable, though Departmental officials referred to the ethanol goals announced in federal climate change plans as their implied targets.

- 3.65 A lack of public reporting of performance against targets is also of concern to us. Though NRCan reports publicly on the activities and results of its programs, it was not consistent in reporting on how well these programs are performing compared to expectations, particularly greenhouse gas emission reduction targets. For the programs we examined, the Department compiles information that could be used for assessing program performance, but it does not report on program performance unless required for other purposes. For example, NRCan provided us with an internal document dated January 2005 that represented an assessment of all its programs that are funded to reduce greenhouse gas emissions. It developed this document to support departmental and government-wide reviews of climate change programs. To meet expectations for effective accountability, it is our view that information of this nature should be available to Parliament and Canadians.
- 3.66 Recommendation. Natural Resources Canada should ensure that clear and concrete greenhouse gas reduction targets are established for each of its programs funded for this purpose. The Department should provide clear and detailed information to Parliament about the performance of its programs compared with greenhouse gas emission targets, and the costs incurred.

Natural Resources Canada's response. Natural Resources Canada is proud of its record for managing programs for results, as approved by Treasury Board in Accountability Frameworks for programs and for the Department. In its annual Report to Parliament under the Energy Efficiency Act, the Department reports clearly and comprehensively on its emission reduction programs, including program sectoral costs and performance in improving the economy's use of energy. In agreement with the recommendation, the Department will take care to report on greenhouse gas emission reduction program targets and costs, as suggested by the Commissioner.

#### Tracking the money is overly complicated

3.67 We expected the Department to have fair and reliable information on all funding and spending associated with the programs we examined in detail that could be used to establish the actual costs of the greenhouse gas emission reductions achieved. We found a variety of financial tools and reports related to funding and spending, which made it difficult to accomplish this. NRCan maintains a central system for recording and reporting all financial information, but each of the programs also developed and maintains a variety of separate spreadsheets. They use these to plan and monitor program budgets and

results across fiscal years, or to provide reports at the program level. Furthermore, monitoring and reporting was done according to a mix of departmental and central agency requirements, making it difficult to establish total program funding and spending. In our view, more consistent accounting and reporting of all funding and spending at the program level are warranted.

**3.68** Recommendation. Natural Resources Canada should establish consistent practices for financial management and reporting of authorized funding and spending at the program level.

Natural Resources Canada's response. Natural Resources Canada agrees with the recommendation. When the Department upgrades its financial system, it will make enhancements that will render financial tracking and reporting less complicated, and establish consistent practices for consolidated management and reporting of funding and spending at the program level.

### Conclusion

- 3.69 Natural Resources Canada (NRCan) is accountable for achieving greenhouse gas emission reductions from the Wind Power Production Incentive, EnerGuide for Existing Houses (until it is wound down), and the Ethanol Expansion Program. Though these programs are only a sample of those under the Department's responsibility, they represented more than \$800 million in authorized funding. NRCan's performance expectations for emission reductions from these programs were confusing. While the Department achieves results, it does not consistently report publicly on program performance against emission reduction and other targets. This hinders Parliament's and Canadians' ability to hold the Department accountable for climate change results.
- **3.70** Natural Resources Canada monitors and reports on funding and expenditures for the programs we examined in detail. However, the financial systems and processes are overly complicated, making it difficult to track and report authorized funding and spending at the program level.
- 3.71 Oil and gas production, particularly the rapid development of Canadian oil sands, is significantly increasing greenhouse gas emissions. However, federal initiatives aimed at this sector have achieved minimal reductions to date and have not yet contributed as expected to federal climate change objectives. The federal government, under the leadership of NRCan and in co-operation with

the provinces and territories, is not clear on how it intends the country to balance the need to reduce these greenhouse gas emissions with the growth expected to take place in the oil and gas sector.

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### About the Audit

### **Objectives**

Our audit had the following objectives:

- Determine, through the examination of selected federal government programs intended to reduce the quantity of greenhouse gases emitted during the production and consumption of energy in Canada, whether the federal government can demonstrate that these programs achieved expected results.
- Determine whether the federal government can demonstrate that programs intended to reduce the quantity of greenhouse gases emitted during the production and consumption of energy are contributing, as expected, to the achievement of its broader short-term commitments and long-term goals for greenhouse gas emission reductions.

### Scope and approach

Our examination covered a number of programs and initiatives funded and implemented through NRCan from 2000 to March 2006. Under Objective 1, we examined the Wind Power Production Incentive, the EnerGuide for Existing Houses program, and the Ethanol Expansion Program, each of which were allocated funding of \$100 million or more. Before the end of our audit work, the EnerGuide for Existing Houses program was discontinued.

Under Objective 2, we examined programs intended to reduce greenhouse gas emissions associated with the oil and gas sector, advance wind power as a renewable source of electricity, and enhance energy efficiency in homes in Canada.

In carrying out our audit, we interviewed government officials from Natural Resources Canada, Environment Canada, and a number of other departments, and reviewed program files, reports, financial statements, and other documents. As well, we interviewed selected recipients of government funding under the programs audited, provincial government officials who were responsible for similar programs, other key stakeholders, and officials of countries considered leaders in the areas of wind power, energy efficiency, and energy policy. We also undertook field visits to several sites receiving funding.

### Criteria

Under Objective 1, we focused on two audit criteria drawn primarily from various federal government sources: one criterion related to results and the other related to financial management. In the first case, we expected NRCan to have fair and reliable information on the results achieved by the programs for which it is responsible. In essence, we looked for

- established results indicators and evidence that these were being measured, compiled, and reported on:
- measures that assure the quality of this information;
- measures that identified and managed key risks associated with the programs; and
- adjustments and corrective actions based on analysis of results, performance, barriers, and success factors.

With respect to finances, we expected the Department to have fair and reliable information on all appropriations and expenditures associated with the administration and implementation of the programs for which it is responsible. Specifically, we were looking for

- systems in place that provide financial and management controls, and
- measures that assure the quality of financial information.

Under Objective 2, we expected that, where the federal government has made associations among programs, NRCan has fair and reliable information on how these programs contribute to the achievement of the government's larger goals for greenhouse gas emission reductions. Specifically, we were looking for

- clearly defined common goals and relationships among individual programs;
- performance indicators based on these goals that are applicable to individual programs and their results:
- evidence that performance was measured, compiled, and reported on the basis of these indicators, and determination of the extent to which individual programs are contributing to the achievement of common goals:
- · measures that identified and managed key risks influencing the contribution individual programs were able to make; and
- adjustments in the choice of programs on the basis of this information.

### Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

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For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

### **Appendix** List of recommendations

The following is a list of recommendations found in Chapter 3. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

# Renewable electricity from wind power 3.27 Natural Resources Canada should lead the development of a wind power strategy for Canada, in collaboration with the provinces and wind industry. The strategy should provide a vision for wind power in Canada and identify what governments will do to support it, and over what

Recommendation

timeframe. (3.14–3.26)

3.32 Natural Resources Canada should complete the evaluation of the Wind Power Production Incentive that it committed to in 2002. It should also complete a thorough economic analysis to clarify the extent to which the economics of wind power are changing across Canada and whether there are implications for this program.

(3.28–3.31)

### Department's response

The federal government is currently assessing its program, the Wind Power Production Incentive, which provides direct support for wind energy development in Canada. Should the government elect to continue a major initiative of this type, Natural Resources Canada would take a leadership role by complementing this with actions to develop a comprehensive framework for supporting wind energy development in Canada, in collaboration with the wind energy industry, and with other federal departments and levels of governments. To that end, the government would complete and engage in consultations on a discussion paper regarding an enabling policy framework for wind energy development in Canada.

Natural Resources Canada agrees with the recommendation and will undertake an evaluation in fiscal year 2008–2009. The Department will continue to work with the wind energy industry to monitor economic factors related to the development of wind power in Canada. The Department will also collaborate with the wind industry in assessing the economics of wind power and the potential implications for possible federal initiatives in the future.

#### Recommendation

### Department's response

### Reducing emissions from the oil and gas sector

3.61 Natural Resources Canada, on behalf of the Government of Canada, should make clear to Parliament by the end of 2006 how and to what degree the country will reduce greenhouse gas emissions in the oil and gas sector, both in the immediate and longer term. At the same time, NRCan should develop a corresponding implementation plan. (3.49–3.60)

Natural Resources Canada agrees that addressing the growth in emissions from the oil and gas sector is an important issue. The Department will work to see that the challenge posed by the link between energy production and use, and air emissions is considered as the Government of Canada develops its Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions.

### Managing for emission reductions in selected programs

3.66 Natural Resources Canada should ensure that clear and concrete greenhouse gas reduction targets are established for each of its programs funded for this purpose. The Department should provide clear and detailed information to Parliament about the performance of its programs compared with greenhouse gas emission targets, and the costs incurred. (3.62–3.65)

3.68 Natural Resources Canada should establish consistent practices for financial management and reporting of authorized funding and spending at the program level.

(3.67)

Natural Resources Canada is proud of its record for managing programs for results, as approved by Treasury Board in Accountability Frameworks for programs and for the Department. In its annual Report to Parliament under the Energy Efficiency Act, the Department reports clearly and comprehensively on its emission reduction programs, including program sectoral costs and performance in improving the economy's use of energy. In agreement with the recommendation, the Department will take care to report on greenhouse gas emission reduction program targets and costs, as suggested by the Commissioner.

Natural Resources Canada agrees with the recommendation. When the Department upgrades its financial system, it will make enhancements that will render financial tracking and reporting less complicated, and establish consistent practices for consolidated management and reporting of funding and spending at the program level.

# Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—2006

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2006



Report of the
Commissioner of the
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to the House of Commons

Chapter 4
Sustainable Development Strategies



Office of the Auditor General of Canada



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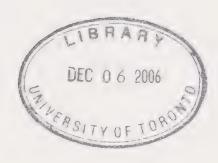
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Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.



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### Chapter

4

Sustainable Development Strategies

Action on Strategy Commitments

The audit work reported in this chapter was cor Office of the Auditor General of Canada. Thes Institute of Chartered Accountants.	nducted in accordance with the legislative mandate, policies, and practices of the se policies and practices embrace the standards recommended by the Canadian

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# Sustainable Development Strategies

### **Main Points**

What we examined

We examined the progress made by federal departments and agencies toward meeting the commitments they made in their sustainable development strategies. We looked at 39 commitments published in the strategies of 21 departments.

Why it's important

Sustainable development is based on the efficient and environmentally responsible use of natural, human, and economic resources. This includes sustaining our natural resources, protecting the health of Canadians and ecosystems, and improving our quality of life and well-being.

The sustainable development strategies of its departments and agencies are an important tool by which the federal government can advance sustainable development. The strategies set out goals, objectives, and specific commitments. Effective action to achieve these commitments is fundamental to both the credibility and the impact of the strategies. Our role in independently auditing and reporting on commitments ensures that Parliament and Canadians are kept informed of the government's progress toward sustainable development.

What we found

- Progress has been satisfactory on 27 of the 39 commitments we examined.
- Departments that have made satisfactory progress toward their commitments generally have well-functioning management systems to plan for achieving the commitment, to implement the plan, and to monitor their progress.
- Departments where progress has been unsatisfactory generally lack such systems and have made minimal efforts toward meeting their commitments. This is of particular concern given the number of years that departments and agencies have had to develop the necessary management systems.
- In some cases, the progress achieved by a department or agency represents an important step toward environmental protection and sustainable development. For example, Indian and Northern Affairs

- Canada made good progress in implementing a management framework to promote and track initiatives that reduce greenhouse gas emissions in Aboriginal and northern communities.
- During the course of auditing the commitments, we found other encouraging signs that organizations are moving forward to make sustainable development part of their operational planning. For example, the Government of Canada has fostered co-ordination across federal organizations to ensure sustainability principles are fundamental to planning for the 2010 Olympic and Paralympic Winter Games. Agriculture and Agri-Food Canada has placed the consideration of sustainable development principles as one of the core elements of the Agricultural Policy Framework.

Environment Canada and the Treasury Board Secretariat have responded. Environment Canada and the Treasury Board Secretariat agree with our recommendation.

# For a detailed description of the climate change issue, please consult **The Commissioner's Perspective**, which includes a section called **Climate Change**—**An Overview**.

Departments and agencies make sustainable development strategy commitments on a variety of social, economic, and environmental issues. For example, some of the commitments selected for this audit deal with contaminated sites, air pollutants, agriculture, invasive species, and investing in sustainable technologies and communities.

### Introduction

- 4.1 The Auditor General Act requires the ministers of designated departments and agencies to table a sustainable development strategy in Parliament every three years. Four other departments voluntarily table strategies. At the heart of these strategies are commitments to actions and targets to achieve sustainable development goals.
- **4.2** The government has said that these strategies are an important tool for advancing its sustainable development agenda, and that it should be held fully accountable for its progress in sustainable development.
- 4.3 The Commissioner of the Environment and Sustainable Development monitors and reports on the federal government's progress toward sustainable development, including the implementation of strategic commitments. In our 2004 Sustainable Development Strategy we committed to an increased focus on departments' performance against their commitments.

### Focus of the audit

- 4.4 In this chapter we report on the progress departments have made in meeting their sustainable development strategy commitments. Specifically, we examined the progress of 21 departments and agencies in implementing 39 commitments from their sustainable development strategies. A number (about 12) of the commitments we examined related to climate change.
- 4.5 The audit scope is limited to the assessment of progress that each audited entity has made against the selected commitment. The 39 commitments we chose to examine are a small subset of the commitments contained in the full range of departmental sustainability strategies. In some cases, we audited more than one commitment per organization. This was typically where commitments were closely related to a broader strategic objective or were interdependent. We chose commitments based on a number of factors, including the significance of the commitment, the relation to the entity's mandate and risks associated with inadequate achievement, coverage of various themes contained in the strategies, and a completion deadline before or near our audit that allowed us to make a conclusion about progress.
- **4.6** We rated progress as either satisfactory or unsatisfactory. Satisfactory progress means that the commitment has been

substantially met, or that it will be met or be reasonably close to being met within the designated time frame. A rating of unsatisfactory does not necessarily mean that the department or agency made no progress.

4.7 Our assessment considered the difficulty of the commitment. For example, a department received a satisfactory progress rating if it was behind schedule on a particularly challenging commitment but had made demonstrable progress to meet the commitment. More details on the audit objective, scope, approach, and criteria are in About the Audit at the end of this chapter.

### **Observations and Recommendations**

- 4.8 We found that satisfactory progress was made on 27 of the 39 commitments we examined. For the remainder, unsatisfactory progress was made. Our detailed findings are shown in Exhibit 4.1.
- **4.9** We noted that a number of departments and agencies are still making commitments that are broadly defined. Typically this makes progress difficult to measure or demonstrate. In these cases, departments and agencies could often point to initiatives that address a commitment generally, but had difficulty demonstrating specific results.
- 4.10 Some departments could demonstrate taking actions to plan, implement, and monitor achievement of the commitments we examined, and showed satisfactory progress toward meeting these commitments. Departmental commitments in this group included Canada Economic Development for Quebec Regions, Finance Canada, Indian and Northern Affairs Canada, Industry Canada, National Defence, the Treasury Board of Canada Secretariat, and Western Economic Diversification Canada.
- 4.11 A number of other departments and agencies had made varying efforts to plan, implement, and monitor their commitments. Some could clearly demonstrate efforts to plan for achieving their commitment, but some difficulties arose in implementation and/or monitoring, such as the reorganization of departments, the complexity of interdepartmental co-ordination, and federal/provincial jurisdictional issues. In most cases, these departments had achieved satisfactory progress. Commitments in this group included those of Agriculture and Agri-Food Canada, the Canada Revenue Agency, Correctional Service Canada, Fisheries and Oceans Canada, Health Canada, Human Resources and Skills Development Canada, and



The Department of National Defence cleaning up a contaminated site at the Distant Early Warning (DEW) line in the Arctic.

Photo: Department of National Defence

The Department of National Defence is one of the federal government's biggest landholders. At the end of 2005-06, the Department reported an estimated \$381 million liability to clean up its confirmed contaminated and higher-risk sites. In its 2004 Sustainable Development Strategy, it committed to reducing this financial liability by four percent per year



The Greenstone building in Yellowknife—one of the buildings that Public Works and Government Services Canada is working on to ensure that it meets the highest energy efficiency rating.

Photo: Public Works and Government Services Canada

Public Works and Government Services Canada (PWGSC) is responsible for providing office accommodation to some 100 federal departments and agencies. It manages office accommodation in 1,900 locations across Canada. PWGSC committed in its 2004 Sustainable Development Strategy to ensuring that all new and rejuvenated federal government buildings meet rigorous standards for energy efficiency through smart environmental design.

Social Development Canada (the latter two are now called Human Resources and Social Development Canada).

- 4.12 We also found departments and agencies where minimal demonstrable effort had been made to plan, implement, and monitor achievement of the commitment. In these cases, departments and agencies had typically either made limited progress or had difficulty demonstrating progress for their commitment. Commitments in this group included those of the Atlantic Canada Opportunities Agency, Canadian Heritage, the former International Trade Canada (now the international trade program of Foreign Affairs and International Trade Canada), and Transport Canada. In one case (Canadian Heritage), we found that while the Secretariat responsible for the relevant area of operations was consulted at an early stage about a potential commitment, the Department did not communicate the formalized commitment to the Secretariat or ensure its implementation.
- **4.13** It should be noted that the groupings above relate only to the approach departments and agencies took to meet the commitments we examined. The grouping does not necessarily reflect the approach the organizations may have taken to meet all of their commitments. For example, Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada made satisfactory progress in some, but not all, of their commitments.
- 4.14 Good management systems lead to good progress. These results show that generally the departments and agencies that had made satisfactory progress had well-functioning management systems in place for the commitments we audited. This confirms our conclusions from previous work. We reported in our 2001 chapter on Sustainable Development Management Systems that organizations with well-functioning management systems were far more likely to deliver on their sustainable development commitments.
- 4.15 There were a number of examples where the satisfactory progress made by departments on their commitments represented an important step toward environmental protection and sustainable development. For example, Indian and Northern Affairs Canada had made good progress in implementing a management framework to promote and track initiatives to reduce greenhouse gas emissions for Aboriginal and northern communities.
- **4.16** During the course of auditing the commitments, we found encouraging signs that organizations are moving forward to make sustainable development part of their operational planning. For

example, the Government of Canada, through the Department of Canadian Heritage, has fostered co-ordination across federal organizations to ensure sustainable development principles are fundamental to planning for the 2010 Olympic and Paralympic Winter Games. Agriculture and Agri-Food Canada has placed the consideration of sustainable development principles as one of the core elements of the Agricultural Policy Framework.

- 4.17 In general, the organizations that made unsatisfactory progress had poor systems to plan, implement, and monitor their commitments. This is of particular concern, given the number of years that departments and agencies have had to develop these management systems. It is also of concern, given previous recommendations we made on the need for well-functioning management systems.
- 4.18 The Treasury Board Secretariat, in response to a recommendation from the Commissioner's 2001 Report, Chapter 2, Sustainable Development Management Systems, made a commitment to "assist departments and agencies by providing advice on establishing or strengthening appropriate management processes to support their activities, including sustainable development."
- 4.19 In the Auditor General's March 2004 Report, Chapter 7, Managing Government—A Study of the Role of the Treasury Board and its Secretariat, we noted that, as the government's general manager, the Treasury Board establishes policies and standards for management practices in departments and agencies. The Treasury Board of Canada Secretariat plays the lead role in developing and refining the government's management agenda and overseeing its implementation across departments and agencies.
- 4.20 Environment Canada also has an important role. In the fall of 2005, the Department was given the responsibility of leading, guiding, and co-ordinating departmental sustainable development strategies. Environment Canada has an opportunity to give greater guidance and support to departments that lack well-functioning management systems. It also has an opportunity to be proactive in helping ensure departments are effectively implementing and monitoring their commitments.
- **4.21 Recommendation.** Environment Canada, in its role of providing leadership and guidance, and co-ordinating the development of departmental sustainable development strategies, should work with departments and agencies to identify ways to improve departmental/agency planning, implementation, and monitoring of commitments.

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Where appropriate, Environment Canada should seek advice and support from the Treasury Board Secretariat on establishing or strengthening appropriate management processes for departments and agencies to support their commitments.

Environment Canada's response. Environment Canada will work with departments and agencies to review the current status of departmental planning, implementation, and monitoring systems for sustainable development strategy commitments, identifying strengths, gaps, and challenges. Based on this assessment, Environment Canada will work with the Treasury Board Secretariat, where appropriate, to determine how existing tools and mechanisms can be strengthened or better applied within departments to improve management planning and accountability for strategy commitments.

The Treasury Board Secretariat's response. The Treasury Board Secretariat supports Environment Canada in its role as the department responsible for leading, guiding, and co-ordinating departmental sustainable development strategies. The Treasury Board Secretariat will work with Environment Canada, where appropriate, to advise and support the establishment or strengthening of management processes for departments and agencies to support their commitments.

Edward 1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies

Commitment	Progress	Comments		
Agriculture and Agri-Food Canada				
Develop a performance measure and establish a baseline to measure whether there has been an increase in the trend in the adoption of best practices for water use by the agri-food sector.		Context. The agricultural sector is the largest consumer of Canada's freshwater resources, and irrigation is the greatest use of agricultural water. The Department committed to working with the agriculture and agri-food processing sectors to improve water resource management, including more efficient water use. It committed to developing a measure of more efficient water use and reporting on performance.		
(2001 Strategy)  Target: Develop a performance measure and establish a baseline by 2003.		What we found. The Department informed us that the intent of this commitment is to increase the overall trend of improved water use in the sector. For this commitment, Agriculture and Agri-Food Canada (AAFC) is promoting best practices in supply (for example, water supply practices on farms and water supply conservation) and protection (for example, source protection and on-field water conservation). Performance measures in several of these areas have been created as part of the National Agri-Health Analysis and Reporting Program and through the Agricultural Policy Framework (APF). However, the specific indicators for water efficiency are still being developed and the Department has made a commitment to have them ready by 2008. We conclude that the Department took action to achieve the commitment and that difficulties arose in implementation.		
	In particular, under the APF, investment is being made to develop farm plans with Canadian farmers that focus on sustainability issues, including water quality and use. The APF is a federal-provincial-territorial initiative, begun in 2002 and extending over five years, to transform the Canadian agricultural sector into a leader of food safety, innovation, and environmental responsibility. The Department's sustainable development strategy and its past commitments were integrated into the APF, and the 2004 strategy reflects this integration.			

commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
Atlantic Canada Opportunities Agency				
Work with local, regional, and provincial groups to foster economic development at the community level that considers the environment.  (2004 Strategy)  Target: Twenty-five projects that promote eco-efficiency funded per year for three years.		Context. The Atlantic Canada Opportunities Agency (ACOA) invested close to \$116 million through its Community Economic Development program in 2004–05. ACOA believes that promoting eco-efficiency, investing in environmental technologies, and improving regional infrastructure all contribute to a thriving Atlantic Canadian economy and prosperous communities.		
		What we found. Our examination showed that while the Agency had met its commitment during 2004–05, it had not actively pursued eco-efficiency projects.		
		The Agency's definition of eco-efficiency is consistent with generally recognized definitions of the concept. It has tracked progress toward this commitment by searching its database to find projects that fall within the definition.		
		However, promoting eco-efficiency is not considered as one of the criteria for project funding, and there is no explicit requirement for individual projects to promote eco-efficiency.		
		The lack of a clear link between the commitment and project funding criteria makes it difficult for the Agency to accurately track progress. However, when we reviewed the documentation for a sample of projects provided by the Agency, we found that most projects satisfied the Agency's definition of promoting eco-efficiency.		
		The commitment could be more easily tracked if promoting eco-efficiency was included as a criterion for project funding and incorporated into the Agency's project evaluation and tracking system.		

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

**Unsatisfactory**—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

### Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
Canada Economic Development for Quebec Regions				
Enable some 40 enterprises to experiment with new technologies or processes associated with the use of natural resources.		Context. The Agency targets the development and commercialization of substitute products, new processes, and new technologies to resolve environmental issues and enhance natural resources. To do so, it provides financial support to Quebec enterprises or specialized		
The Agency will fund 25 projects to support small and medium-sized enterprises wishing to commercialize their products on international markets.		organizations for carrying out feasibility studies; development, testing, or experimentation work; pre-commercial demonstration; and design or implementation of commercialization plans.		
(2004 Strategy)		What we found. The Agency has made some progress on both commitments. It has provided financial support to 22 enterprises to		
<b>Target:</b> 2003–06	develop new technologies or processes associated natural resources, and to another 19 enterprises for projects. As well, the Agency has invested in 20 to experimentation projects being carried out by spec. If the results of these projects are positive, they witterm, allow a number of enterprises to experiment commercialize new technologies and processes.  The Agency has put in place various measures, sun "champions" in regional offices, signing partnershing federal departments and agencies, adjusting its proferamework, and developing a guide for identification monitoring of sustainable development projects. We additional elements could have been added, in part provide a better understanding of sustainable development and commitments and of the links between the Agency potential projects, better integration of sustainable regional offices operations, and a more active role.	develop new technologies or processes associated with the use of natural resources, and to another 19 enterprises for commercialization projects. As well, the Agency has invested in 20 testing and experimentation projects being carried out by specialized organizations. If the results of these projects are positive, they will, in the medium term, allow a number of enterprises to experiment with or to		
		The Agency has put in place various measures, such as designating "champions" in regional offices, signing partnership agreements with federal departments and agencies, adjusting its programming framework, and developing a guide for identification, analysis, and monitoring of sustainable development projects. We feel that some additional elements could have been added, in particular, training to provide a better understanding of sustainable development objectives and commitments and of the links between the Agency's programs and potential projects, better integration of sustainable development into regional offices operations, and a more active role by the Agency's sustainable development committee in monitoring results.		
Catiofa atama Danama in a tinfa atama				

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Unsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
Canada Revenue Agency				
Integrate sustainability criteria into negotiations, discussions, partnerships, and decision making with provinces and territories and other government departments and agencies on CRA business. (2004 Strategy)  Target: 31 March 2007		Context. The Canada Revenue Agency (CRA) is responsible for administering the federal government's tax programs. It also administers certain provincial and territorial tax programs. In addition, the CRA has the authority to enter into new partnerships with the provinces, territories, and other government bodies to administer non-harmonized taxes and other services, at their request and on a cost recovery basis. The Agency has more than 60 agreements with other departments and agencies for joint program delivery.		
		The Agency planned to implement this sustainability commitment in three steps, as outlined in its action plan, which was revised in 2005.		
Step 1: Establish a definition for sustainability criteria for CRA partnerships, and identify opportunities to include the criteria in negotiations with partners by 31 March 2005.		What we found. The Agency drafted criteria that are specific to partnerships. The drafting process included consultations to refine the criteria. There is now a working definition for sustainability criteria that includes social well-being, environmental quality, and good governance. However, these criteria have not yet been formally approved.		
		The Agency has identified the documents in which the sustainability criteria are to be included for negotiations with partners.		
Step 2: Integrate the sustainability criteria in identified guidelines and documents for partnership agreements by 31 March 2006.	0	What we found. The intention of developing the sustainability criteria is to integrate them into the identified documents for partnership negotiations. However, there was little evidence that the criteria have been included in these documents.		
Step 3: Include sustainability criteria in negotiations with partners, as identified in the findings report by 31 March 2007.	Not assessed	What we found. Step 3 was not evaluated, as it is not due until 31 March 2007, and Step 2 has not yet been completed.		

**Satisfactory**—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

**Unsatisfactory**—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

### Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
Canadian Heritage				
Develop a set of sustainable development principles that can be applied to the design and delivery of the Vancouver 2010 Winter Olympic Games.	ign	Context. At the time of our audit, the total commitment of the Government of Canada toward the Vancouver and Whistler 2010 Olympic and Paralympic Winter Games was an investment of \$497 million. The 2010 Olympic and Paralympic Winter Games Federal Secretariat was established within Canadian Heritage to oversee		
(2004 Strategy)  Target: 31 March 2005		the delivery of federal commitments to the Games, and to ensure that planning and implementation of the Games reflect national public interests and priorities.		
		The organization responsible for planning, organizing, financing, and staging the Games is the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC). The predecessor of this committee, the Vancouver 2010 Bid Corporation, in keeping with requirements set by the International Olympic Committee, developed sustainable development principles and an associated action plan in the fall of 2002. VANOC later endorsed the principles and made sustainability a core element of its business plan.		
		What we found. Canadian Heritage did not develop a set of sustainable development principles to be applied to the design and delivery of the 2010 Winter Games. As indicated above, the federal government is one partner in the 2010 Winter Games, and sustainable development principles had already been entrenched by VANOC before Canadian Heritage made this commitment. Thus the relevance of the commitment was questionable. Moreover, while the Secretariat was consulted at an early stage about a potential commitment, the Department did not follow up by communicating the formalized commitment to the Secretariat and ensuring its implementation.		
		We emphasize that our audit focussed on the commitment to develop principles and not on the extent and outcomes of federal contributions to the greening of the Games. During the audit, we saw substantial evidence that the Government of Canada had been taking steps to contribute to the environmental sustainability of the Games, and the Department has been fostering co-ordination and partnerships across federal organizations to help meet sustainable development goals.		

Satisfactory - Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Correctional Service Canada		
Reduce emissions of the greenhouse gas* group nitrogen oxides (NOx) from CSC facilities in the Quebec City–Windsor corridor and the Fraser Valley by 10 percent from a 2004 baseline.  (2004 Strategy)  Target: 2007  *NOx emissions are not a greenhouse gas.		Context. Nitrogen oxides form when fuel is burned at high temperatures. The sources of NOx are motor vehicles, electric utilities and other industrial, commercial, and residential sources that burn fuels. Although nitrogen oxides are not greenhouse gases, NOx emissions do cause a wide variety of serious health and environmenta impacts, including smog, acid rain, and respiratory problems. Correctional Service Canada (CSC) committed to establishing a 2004 baseline measurement of the total NOx emissions from its facilities. Th baseline would allow the Department to quantify the reduction of emissions for its facilities within the Quebec City—Windsor corridor and in the Fraser Valley, Canada's two most populated regions.
		The Department has committed to a 10 percent reduction of its emissions by reducing the generation of emissions or capturing them before they escape, or by replacing or retrofitting emission sources with boilers and furnaces that produce lower emissions.
		What we found. The Department has included a NOx reduction commitment in each of its sustainable development strategies since the first strategy was tabled in 1997. It has taken measures to meet this commitment, including a \$5.15 million retrofit project. A baseline for 2005 was completed in March 2006, and the Department used this to estimate a baseline for 2004.
		The Department with the exception of Bath Institution in Ontario, has noticeably reduced NOx emissions since 2001. It estimates that it has reduced emissions by 7.2 percent since 2004.
		The Department has not completed any major projects to reduce emissions at institutions in the Fraser Valley, and there are no major projects planned. The Department has completed a number of minor projects, but has not yet measured their impact on emissions.
		It is not apparent why the Fraser Valley was included in the commitment, as officials told us that the heating plants in the Fraser Valley were among the best-performing heating plants in the Department and that money could be spent more effectively in other locations.
		In its 2003 sustainable development plan progress report, the Department stated that it "had collected the information needed to establish baselines" in 2001 and that it would complete a major energy retrofit project in 2003–04, which would allow the Department to meet the target. the Department did install four new boilers in 2003–04 in the Windsor–Quebec corridor. However, it only completed the actual 2004 baseline estimates in 2006.
		The Department's sustainable development strategy classifies NOx emissions as greenhouse gases. While this is not an accurate classification, NOx emissions do contribute to smog. Therefore, the commitment would have been better classified under a different objective of the CSC strategy.

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

**Unsatisfactory**—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

### Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Environment Canada	J	
Develop a national research and development approach to help address the science needs associated with high-impact weather and climate events.* (2004 Strategy)  Target: In 2005–06, assess human health, environmental, and infrastructure risks and vulnerabilities.  * For more information on this commitment, see Chapter 2, Adapting to the Impacts of Climate Change.		Context. This commitment and the associated target are delivered by Environment Canada's Adaptation and Impacts Research Division (AIRD). AIRD's mission is to "provide scientific expertise and leadership to Canadians on the environmental, social, and economic risks, vulnerabilities, impacts, and adaptations associated with atmospheric variability and change."  More extreme and intense weather events, such as extended heat waves and ice storms, pose increased risks to the health and safety of Canadians. Increases in the intensity and frequency of extreme events are consistent with many of the changes expected as a result of global warming.  What we found. AIRD has conducted, often in partnership with other organizations, various assessments in the areas of health, environment, and infrastructure vulnerabilities. Examples of assessments that were or are being conducted include
		<ul> <li>adaptation of urban areas to atmospheric change,</li> <li>variations in severe ice storm risks and rainfall extremes for Ontario,</li> <li>climate change and Canada's national park system, and</li> <li>impacts of climate change on the spread of lyme disease.</li> <li>The quality of the assessments was not examined as part of our audit work.</li> </ul>
Refine and use climate models to inform climate change scenarios and policy discussions.*  (2004 Strategy)  Target: In 2005–06, provide impacts, adaptation, and policy communities with scenarios of climate extremes and variability in changed climate.  * For more information on this commitment, see Chapter 2, Adapting to the Impacts of Climate Change.		Context. Within Environment Canada, the Canadian Centre for Climate Modelling and Analysis (CCCma) and the Climate Change Scenarios Network (CCSN) within AIRD provide information about probable climate conditions in the future. AIRD also provides scientific expertise and leadership to Canadians on vulnerabilities, impacts, and adaptations associated with atmospheric variability and change.  What we found. Maps of atmospheric hazards were developed from climate data and peer-reviewed scientific studies. Environment Canada's AIRD and Ontario Region have developed maps of atmospheric hazards in Ontario. These maps were developed and provided to help municipalities conduct their hazard identification and risk assessments, as required by Ontario's Emergency Management Act. A Web site containing this information was also developed.  Although these atmospheric hazard maps are a step in the right direction, we found that the Department does not provide maps of possible future atmospheric hazards based on possible future conditions.  We could not find information about many possible future climate extremes from regional and global models on the CCCma and the CCSN Web sites. Although many scientific articles on extremes in a changing climate have been published by Environment Canada scientists, these would likely not be readily usable outside the research community.

Satisfactory — Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Unsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
Environment Canada (continued)				
Work in partnership with federal and provincial governments, academia, and the private sector to make regional scale climate change scenario tools available for decision making.*		Context. Information about future climate change on a regional scale is important for planning adaptation regionally and locally. The two main methods to produce regional scale climate information are using statistical methods to bring the results of a global model down to a regional scale or developing a regional climate model.		
(2004 Strategy)  Target: In 2004, establish a scientific group to provide a strong focus on regional climate modelling and data analysis.  * For more information on this commitment, see Chapter 2, Adapting to the Impacts of Climate Change.		What we found. Although Environment Canada has been an international leader in climate modelling at a global scale, distribution of regional scale information is restricted. Currently, the development of a regional model is led by academia, and it is possible to obtain some information at a regional scale from Environment Canada; however, the information is in a format that is more amenable to use by the scientific community.		
Contribute to meeting the Government of Canada's target of purchasing at least 20 percent of its electricity from low and non-emitting sources.*  (2001 Strategy)  Target: 2005  * For more information on this commitment, see Chapter 5, Environmental Petitions.		Context. One of the Government of Canada's initiatives to reduce greenhouse gas emissions from its own operations involves purchasing electricity from green power sources for federal facilities across Canada through the Purchase of Electricity from Renewable Resources (PERR) program. The purpose of this initiative is to show federal leadership on climate change and help develop Canadian markets for green power.  What we found. The Department stated that its contribution to meeting the federal government's target to purchase 20 percent of its electricity from green power has been met through its agreement to purchase two gigawatt hours per year of green power in Alberta between 1997 and 2007 and through its continuing participation in PERR program committees. However, the total federal government commitment remains unfulfilled. Also, the Department stated that the 2005 target date from its 2001 sustainable development strategy was a misprint and should have read "completed by 2006."  In our view, the Department made limited progress on this commitment. The Department did not develop clear indicators of what it expected to achieve toward the federal government's target of 20 percent electricity from green power, nor did it demonstrate or communicate clearly what progress had been achieved. For example, in its February 2002—March 2003 progress report on 2001 sustainable development strategy commitments, the Department reported that progress toward the target was delayed until 2006. Yet, in its April 2003—December 2003 progress report on those commitments, the Department reported it had met the target, even though no new agreements had been put in place.		

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Unsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Edition 1.1. Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
Finance Canada				
Continue to conduct economic research and analysis, including through the use of one of the economic models the Department maintains, to assess the potential costs of a major economic instrument, such as emissions trading, and other policy or program options to reduce emissions of greenhouse gases.* (2001 strategy)  Target: No date  * Our assessment of this commitment was limited to Finance Canada's analysis of the emissions trading instrument.		Context. Emissions trading involves the purchase and sale of emission reduction credits by regulated emitters. Canada's proposed domestic emissions trading system is a policy instrument that could have a significant fiscal and economic impact. For this reason, Finance Canadhas been involved in the analysis of domestic emissions trading option since 1998.  What we found. While Finance Canada's performance expectation for this commitment was not documented, it indicated that it expected its analysts to develop and apply a model that examines the economic impact of using an emissions trading system to reduce greenhouse gasemissions in Canada. Work on this model was completed in 2003, and the resulting working paper is posted on Finance Canada's Web site. The application and use of the model results, however, has been limited. While the model results were presented to senior officials within and outside Finance Canada, the analysis was not directly used in the federal climate change process. The model has not been updated and did not take into account key policy concerns related to emissions trading (for example, a cap on costs to industry or a possible higher-than-predicted growth in greenhouse gas emissions).  Additional details on emissions trading and our key observations and recommendations on this issue are in Chapter 1, Managing the Federal Approach to Climate Change, paragraphs 1.61 to 1.87.		
Continue to maintain awareness of the Department's process for implementing the 1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals (Strategic Environmental Assessment).  (2004 Strategy)  Target: The number of strategic environmental assessments conducted by the Department will be tracked and monitored.		Context. Strategic Environmental Assessment (SEA) is the examination of policies and programs at the planning stage to carefully consider the potential effects on the environment before they are approved. SEA is critically important planning tool, given the potential for serious and irreversible damage that can result from some human activity.  Finance Canada has developed a questionnaire to conduct a preliminal assessment of proposals. If the results reveal the proposal is likely to have an important environmental impact, a full SEA is required.  Our examination focussed on the commitment to maintain awareness of the Strategic Environmental Assessment and on the number of assessments conducted, rather than on the rigour or quality of the SE process.  What we found. The Department has made satisfactory progress toward this commitment. The Canadian Environmental Assessment Agency and selected staff in the Department provide training to other staff. Information on the SEA process is provided to new staff as part of their orientation material.  A schedule of assessments that branches expect to bring forward is updated quarterly. The Department uses a registry to track and monitor the assessments it conducts. The number of SEA screenings has increased from 3 in 2003 to 41 in 2004 and 79 in 2005.		

Satisfactory- Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Oursatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Fisheries and Oceans Canada		
Work with provinces and territories to develop an implementation plan, with costed options, for a National Strategy on Aquatic Invasive Species.	0	Context. Aquatic invasive species pose a major threat to Canada's multimillion dollar fishing industry. They can also cause significant harm to the environment, infrastructure, and human health.
(2005 Strategy) Target: 2005		We reported on the threat posed by invasive species and lack of action to address this threat in our 2002 and 2005 reports.
		In September 2004, the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) approved the Canadian action plan for aquatic invasive species. It also directed the Aquatic Invasive Species Task Group, which is co-chaired by Fisheries and Oceans Canada, to develop an implementation plan that outlines the resources and structures necessary to fully implement the action plan.
		What we found. The Department has made satisfactory progress toward this commitment despite challenges faced with multiple jurisdictions. In October 2005, CCFAM approved the Implementation Strategy 2005–07 prepared by the task group. The implementation strategy identifies three scenarios and the associated costs. The task group has also developed a work plan for 2005–07, which identifies activities toward implementing the action plan. However, at the time of the audit there was no recommendation on the preferred scenario for implementation. It is also not clear what level of resources will be needed to fully implement the action plan.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

#### Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments	
Health Canada			
Develop the structure for a national database on annual pesticide sales in Canada.		<b>Context.</b> Data on pesticide sales can contribute important information for a variety of monitoring and research needs, such as investigating the relationship between pesticide use and their persistence in the environment.	
(2001 Strategy)			
Target: March 2004		The federal government created the Pest Management Regulatory Agency within Health Canada in 1995. The Agency subsequently committed to developing a national pesticide sales database.	
		In 1999, we reported that Canada was one of few member countries of the Organisation for Economic Co-operation and Development that did not have a national database on annual pesticide sales. In 2002, we reported that Canada still did not have such a database.	
		What we found. The Agency has made satisfactory progress in developing the structure for a national database on annual pesticide sales. By March 2004, the Agency had created an electronic data entry system to capture national sales information from pesticide manufacturers. It developed a draft of the database by conducting two pilot projects where selected pesticide manufacturers voluntarily submitted pesticide sales data.	
		Although the Agency met its sustainable development strategy commitment in 2004, Canada does not yet have a national pesticide sales database. The database will be fully implemented once regulations, under the new <i>Pest Control Products Act</i> requiring pesticide manufacturers to report annual sales information for their products, come into effect.	

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

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### Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments	
Human Resources and Skills Development Canada*			
Develop a departmental sustainable development policy that provides guidance on department-wide sustainable development priorities, and clearly situates it within the Department's Integrated Management Framework.  (2004 Strategy)		Context. A department's policy on sustainable development helps it integrate sustainability principles into programs and operations. A policy should provide a more strategic approach to sustainable development and clarify roles and responsibilities in applying sustainable development principles. For Human Resources and Skills Development Canada, how the human capital aspect of sustainable development is defined and applied is particularly relevant.	
Target: Senior management approval of the policy by March 2006  * Human Resources and Skills Development Canada			What we found. The Department has made some progress in developing elements of a sustainable development policy. Prior to its re-organization in February 2006, the Department had plans to complete the process within a reasonable time.
and Social Development Canada were formed in December 2003 when Human Resources Development Canada (HRDC) was split into two separate departments. HRDC's third sustainable development strategy was jointly tabled by the ministers of both departments in February 2004. Nearing the end of our examination work, in February 2006, the two departments remerged into one department called Human Resources and Social Development Canada. From February 2004 to February 2006, the two departments individually worked toward meeting this commitment in the context of their individual mandates. Consequently, progress has been assessed individually.		The Department hired a contractor to finalize an issues scan with senior management to include in a draft vision and policy on sustainable development for March 2006. This work builds upon previous work completed in early 2005 that defined options for a sustainable development policy, vision, and performance framework, given the human capital aspect of the Department's mandate. The Department informed us that progress in developing a policy was affected by the creation of Service Canada in May 2005. A decision was made to re-think what sustainable development means in light of the Department focussing on its new policy role. Efforts have focussed on the development of a vision of sustainable development as a foundation for its next sustainable development strategy in December 2006. As of February 2006, the Department expected to further refine the draft policy as part of this process.	
		Human Resources and Social Development Canada expects to continue the policy development work of both Human Resources and Skills Development Canada and Social Development Canada for inclusion in its next, remerged sustainable development strategy.	

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

**Unsatisfactory**—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

development strategy was jointly tabled by the

Development Canada. From February 2004 to February 2006, the two departments individually

worked toward meeting this commitment in the

progress has been assessed individually.

context of their individual mandates. Consequently,

ministers of both departments in February 2004. Nearing the end of our examination work, in

February 2006, the two departments remerged into

one department called Human Resources and Social

Library 4 i Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Comments Commitment **Progress** Social Development Canada\* Context. A department's policy on sustainable development helps it Develop a departmental sustainable integrate sustainability principles into programs and operations. A policy development policy that provides guidance should provide a more strategic approach to sustainable development on department-wide sustainable and clarify roles and responsibilities in applying sustainable development priorities, and clearly situates development principles. For Social Development Canada, how the social it within the Department's Integrated dimension of sustainable development is defined and applied is Management Framework. particularly relevant. (2004 Strategy) What we found. The Department has made progress in developing key Target: Senior management approval of the elements of a sustainable development policy. Prior to its policy by March 2006 re-organization in February 2006, the Department was on track to complete this process within a reasonable time. \* Social Development Canada and Human Resources and Skills Development Canada were formed in December 2003 when Human Resources Development Canada (HRDC) was split into two separate departments. HRDC's third sustainable

The Department had developed a social development policy framework that included the principle of sustainability. Additionally, it had completed a draft vision and proposed definition of social sustainable development as well as an analysis of policy options for integrating the social dimension of sustainable development into its programs. As of February 2006, Social Development Canada expected to transform this work into a draft policy for review by senior management before the end of March 2006. The Department expected to elaborate on the social dimensions of sustainable development as part of its next sustainable development strategy for tabling in December 2006.

Human Resources and Social Development Canada expects to continue the policy development work of both Social Development Canada and Human Resources and Skills Development Canada for inclusion in its next, remerged sustainable development strategy.

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Unsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Indian and Northern Affairs Canada		
		Context. Many believe that climate change is one of the most significant environmental challenges facing the world today. Within the federal government, climate change is co-managed by Environment Canada and Natural Resources Canada. Many other departments also have significant contributions to make, including Indian and Northern Affairs Canada (INAC). Scientific evidence increasingly suggests that climate change will disproportionately affect Aboriginal and northern peoples due to geography, reliance on the land, the speed of climate change, and a limited capacity to adapt. The Department believes that a long-term strategy and management framework will allow it to address climate change issues in Aboriginal and northern communities and to help meet Canada's Kyoto Protocol commitments.
Develop and implement a management framework to reduce greenhouse gas (GHG) emissions for Aboriginal and northern communities.  (2004 Strategy)  Target: March 2004		What we found. A management framework to achieve the desired results is being implemented. In August 2003, the federal government created the Aboriginal and Northern Community Action Program (ANCAP), and approved new funding totalling approximately \$30.7 million over four years for energy-related initiatives in Aboriginal and northern communities. The program's main goal is to reduce greenhouse gas emissions in these communities by 1.2 megatonnes per year by 2008. The program's management framework is detailed in an Operational Management Guide, approved in March 2004. According to INAC, this framework is reviewed and updated annually to reflect community experiences and lessons learned. The program's success in meeting its intended goal to reduce GHG emissions will be measured in 2008.
Design and implement a system to measure reduction in GHG emissions for Aboriginal and northern communities. (2004 Strategy)  Target: December 2005		What we found. The Department has completed the development of a prototype database system to document GHG emissions in Aboriginal and northern communities and measure changes in these emissions that result from energy efficiency and renewable energy initiatives.  However, according to the Department, more work is required to improve the accuracy of calculating reductions of GHG emissions. The Department is currently working with a private organization that is considered to be an expert in the area of greenhouse gases, to establish how these complex calculations will be done. At the same time, the Department is undertaking an in-depth analysis and systems design exercise to add increased rigour to all GHG calculations and to document data in a way that is more transparent and user-friendly. The Department expects that this additional work will continue well into 2006–07.

**Unsatisfactory**—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.



#### Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

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	Context. Major changes are affecting Aboriginal and northern communities: There are changes in animal migration; winter roads are available for shorter periods; and melting permafrost puts buildings, roads, and other infrastructure at risk. Aboriginal people and northerners need the knowledge and tools to respond effectively to the effects of climate change.  What we found. Since 2000, Indian and Northern Affairs Canada has worked at identifying the risks related to climate change in the North through a series of workshops.  In 2004, the Department created the Northern Climate Change Coordinating Committee (NC4), which is a forum of partners on climate change impacts and adaptation.  Priorities for action in the North were identified in the summer of 2004 as well as through the work on the Northern Impacts and Adaptation Strategy. A number of federal departments were part of the process, as well as northern Aboriginal organizations, territorial governments, and research institutes.  The Department is currently working with a consultant to complete the strategy. A draft strategy was provided to us, and the Department is making good progress toward its completion by the end of 2006. In southern Canada, priorities still have to be defined. The Department plans to create a committee during 2006. Regional priorities will be

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Oursatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Industry Canada		
Identify, for annual review by senior managers, sustainable development opportunities across Industry Canada's strategic objectives that the Department could pursue as part of its policy and program proposals, to further integrate sustainable development into corporate decision-making procedures and reporting documents.  (2001 Strategy)  Target: Ongoing		Context. This commitment refers to the sustainable development strategy's overarching theme of expanding sustainable development considerations in corporate planning. This is an important commitment because it affects the Industry Canada's culture.  What we found. To signal that sustainable development needs to be more actively considered during the development of policies, plans, and program proposals, the Department added sustainable development to the top of its priorities, beginning with the 2002–2003 Estimates—Report on Plans and Priorities.  The Department appointed the Assistant Deputy Minister of the Policy Sector as its sustainable development champion. The champion's roles and responsibilities are shared within the Policy Sector and include the following:  • to oversee the implementation and monitoring of the sustainable development strategy;  • to lead the integration of sustainable development in decision making, planning, and policy development, and programs and services for the Department; and  • to provide departmental advice on sustainable development to the Minister, Deputy Minister, and senior staff.  The sustainable development champion is the chair of the Senior Policy Committee, which is composed of 14 members, mainly at the assistant deputy minister level, and which meets on a weekly basis. This committee is the forum for senior departmental officials to review and advise the Deputy Minister on the Department's policy agenda and ensure that a more corporate view is built into new policy proposals. The champion can regularly identify sustainable development

and program proposals.

opportunities across the Department during the development of policy

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
International Trade Canada*		
Support the development and marketing of innovative pollution-reducing technologies	0	Context. International Trade Canada has a unique role to play in promoting opportunities for sustainable development internationally.
by 2005.		By supporting the development and marketing of sustainable development technologies, the Department can assist in important opportunities for Canadian-based firms.  As well, the Canadian government believes that liberalized trade and protection of the environment are key components of sustainable development. The Department helps support the inclusion of trade-related environmental issues into trade negotiations.
(2004 Strategy)		
Target: Late 2005		
*International Trade Canada (ITCan) was formed in December 2003 from portions of the Department of Foreign Affairs and International Trade (DFAIT) and Industry Canada. ITCan remerged with DFAIT during our audit.		
		The Department states in its strategy that the outcomes of meeting this commitment will be the identification of partners for international research and development collaboration, attraction of capital investment needed to complete development, and increased trade in innovative, pollution-reducing and energy-efficient Canadian products and services.
		What we found. The Department had not defined "innovative pollution-reducing technologies" for the purposes of tracking this commitment. It was also unable to provide a plan that showed deliberate efforts were made to meet this specific commitment or track progress toward meeting its outcomes.
		Despite a lack of evidence that showed deliberate efforts made to meethis particular commitment, the Department believes it met the commitment.
		The Department provided examples of some relevant environmental initiatives, such as organizing trade and research missions that deal with fuel cells and other non-conventional energy technologies that have pollution-reducing benefits. It also mentioned its ongoing GATS (General Agreement on Trade in Services) negotiations, which it believes will increase environmental protection and economic development through trade liberalization in environmental services.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments		
National Defence				
Reduce the Department's contaminated sites' liability by four percent per year. (2003 Strategy)		Context. National Defence describes contamination on Department property as a legacy of past releases of hydrocarbons and other chemicals that resulted from industrial and military activities conducted		
Target: Ongoing		according to the accepted practices of the time.		
		National Defence stated it would reduce its contaminated site liability by four percent per year, aiming to reduce the liability over a reasonable time, keeping in mind the time required to address some major projects and the availability of funds to do the work.		
		National Defence reported a contaminated site liability of about \$381.2 million at the end of fiscal year 2004–05. This liability represents National Defence's estimate of future costs to remediate and manage its confirmed, higher-risk contaminated sites. It does not include lower-risk sites or sites that have not yet been assessed.		
		In its 2004–05 Departmental Performance Report, National Defence reported that it had achieved an 11.4 percent reduction in its contaminated site liability.		
		What we found. We found that National Defence exceeded its 4 percent target in 2004–05. Based on our audit of the Department's expenditures on remediation, we estimate that National Defence reduced its 2004–05 contaminated sites' liability by about 11 percent. This is materially consistent with the reduction National Defence reported to Parliament in its 2004–05 Departmental Performance Report.		
		National Defence recognizes that its liability for contaminated sites is likely to increase in the future. New sites may be identified and liability for some sites will only become known in the future, after studies, technology, and work at the site are taken into account.		

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Context. This commitment and the associated target are delivered by Natural Resources Canada's Reducing Canada's Vulnerability to Climate Change (RCVCC) program. The program's goal "is to lessen the vulnerability of Canadians, their infrastructure and communities to climate change via research."
Natural Resources Canada's Reducing Canada's Vulnerability to Climate Change (RCVCC) program. The program's goal "is to lessen the vulnerability of Canadians, their infrastructure and communities to
What we found. Many assessments have been conducted under the RCVCC program with a focus on permafrost, coastal environments, and forests. These include studies on the sensitivity of permafrost to climate warming in the Canadian North, assessments of sea-level rise on the east and west coasts, and development of a model providing outputs for forest ecosystem response to climate change that can be applied in forest ecosystems across Canada. We did not examine the quality of
these assessments.
Context. This commitment and the associated target are also delivered by Natural Resources Canada's RCVCC program.
What we found. These two assessments have been completed. We did not assess their quality.
Context. This commitment and the associated target are also delivered by Natural Resources Canada's RCVCC program with partners.
What we found. Work in the RCVCC program in collaboration with Environment Canada's National Water Research Institute has involved
studies of changing water supply to the eastern slopes and western
Prairies from glacier sources located in the Rocky Mountains. Several studies have been completed while others are near completion.
Research to assess the risk of climate change to Prairie agriculture and
potential adaptation options is conducted in collaboration with Agriculture and Agri-Food Canada. The first component of the project consists of an assessment of the impacts of climate change without adaptation, and is near completion.

Satisfactory — Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

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Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Natural Resources Canada (continued)	<u> </u>	
The following commitments relate to energy production and consumption.		Energy production and consumption represents a major sustainable development challenge for Canada because it accounts for more than 80 percent of Canada's greenhouse gas emissions. Natural Resources Canada (NRCan) is the federal department with primary responsibility for energy.
		At the time of our audit work, the Department had received the majority of funds allocated to federal government departments for programs to address climate change. The Department was responsible for more than 30 programs aimed at reducing greenhouse gas emissions.
		The Department uses a range of tools to support the reduction of emissions, including providing grants and contributions, giving out information, and regulating industry. The following sustainable development strategy commitments are only a small sample of the Department's programs in this area.
Expand fuel ethanol production and use in Canada, contributing significantly to Canada's target of having at least 35 percent of the gasoline supply contain 10 percent ethanol.*		Context. Motor vehicles are one of the biggest contributors to greenhouse gas emissions in Canada, and changing vehicle fuel mix by blending in ethanol is one of several ways to reduce these emissions. According to the Department, gasoline blended with 10 percent ethanol reduces greenhouse gas emissions by about 4 percent, compared with normal gasoline.
(2004 Strategy)		
Target: 2010  * For more information on this commitment, see Chapter 3, Reducing Greenhouse Gases Emitted During Energy Production and Consumption.		One of the initiatives funded under Budget 2003 was the Ethanol Expansion Program. Launched in October 2003 to increase the production and use of ethanol in Canada, the program provides financial contributions for the construction or expansion of fuel ethanol plants. The implied target for the program is the production of 1.2 billion litres of ethanol by 2010.
		What we found. The Department has announced its intention to support 11 projects under the Ethanol Expansion Program. Based on the proposed production capacity of each plant, the program is expected to deliver the volume of ethanol needed to meet this sustainable development strategy commitment. Therefore progress is deemed satisfactory.

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ext. dot 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Natural Resources Canada (continued)		
Install 1,000 megawatts (MW) of new wind energy capacity in Canada.*	•	<b>Context.</b> Wind power is a renewable form of energy that does not emit greenhouse gases while it produces electricity.
(2004 Strategy)		To encourage increased production of wind power, Natural Resources Canada introduced the Wind Power Production Incentive (WPPI) in 2002. This began as a multi-year, \$260-million program that aims to install 1,000 MW of wind energy capacity by 2007.
<b>Target:</b> 2007		
* For more information on this commitment, see Chapter 3, Reducing Greenhouse Gases Emitted		
During Energy Production and Consumption.		What we found. By 2005, the program had committed all of its funding initially allocated for projects. The contribution agreements signed for this initial funding represented a total capacity of 729 MW. An additional \$69.9 million was made available to the program in 2005, and by March 2006, additional agreements had been signed to bring the total to 924 MW.
		Although National Resources Canada had to draw on extra funds to achieve this target, progress is considered satisfactory.
Achieve a 20 percent average energy savings for homes that undertake a second, post-renovation EnerGuide for Houses audit.*		Context. In 2001, there were 11.6 million dwellings in Canada, which were home to almost 30 million people. Canadian households use energy primarily for space and water heating, appliances, lighting, and space cooling—all of which contribute to greenhouse gas emissions.
(2004 Strategy)		The EnerGuide for Existing Houses program was introduced in 1998 and aimed to improve the energy efficiency of existing houses and reduce residential consumption of heating fuel and electricity. Before it
<b>Target:</b> 2007		
* For more information on this commitment, see Chapter 3, Reducing Greenhouse Gases Emitted During Energy Production and Consumption.		was cancelled in spring 2006, the program had two components: home evaluations and grants for renovations.
		What we found. Natural Resources Canada surpassed this target. In its Report to Parliament under the Energy Efficiency Act for the Fiscal Year 2004–2005, Natural Resources Canada reported that energy consumption was reduced by an average of 27 percent in renovated homes.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

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Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Natural Resources Canada (continued)	<u> </u>	
Establish five new agreements under the Market Incentive Program to support the marketing efforts of distributors of electricity	0	<b>Context.</b> Emerging renewable sources of electricity using wind, sun, water, biomass, and geothermy can displace high-carbon electricity generation and reduce greenhouse gas emissions.
from emerging renewable sources.*		The Market Incentive Program (MIP) was introduced as part of the
(2004 Strategy)  Target: 2006		federal government's Action Plan 2000 to stimulate markets for renewable electricity (for example, encouraging the use of wind power by providing incentives to electricity distributors to encourage their
* For more information on this commitment, see Chapter 3, Reducing Greenhouse Gases Emitted During Energy Production and Consumption.		residential and small business customers to buy renewable electricity) Funding for this \$25-million program is available until 31 March 2007
- and and an		What we found. Although this commitment specifically mentions the establishment of new agreements, its intent was to provide support to distributors of electricity from renewable sources.
		As of March 2006, a total of eight contribution agreements had been signed, representing \$3.2 million in committed funds, or 13 percent of the program's budget. Only \$0.5 million, or 2 percent of the budget, had actually been invoiced against these agreements.
		Based on these results, the federal government will not be renewing th program and will be shutting it down by March 2007.
		Thus, although the agreements were signed, our view is that because the intent of the commitment was not met, progress is deemed to be unsatisfactory.
Complete agreements to purchase 450 gigawatt hours of electricity from renewable sources.*	0	Context. One of the Government of Canada's initiatives to reduce greenhouse gas emissions from its own operations involves purchasing electricity from green power sources for federal facilities across Canada, through the Purchase of Electricity from Renewable Resources (PERR) program. The purpose of the initiative is to show federal leadership action on climate change and help develop Canadian markets for green power.
(2004 Strategy)		
Target: 2006		
* For more information on this commitment, see Chapter 5, Environmental Petitions.		What we found. Natural Resources Canada's 2004 sustainable development strategy commitment underlines the Government of Canada's commitment to purchase 450 gigawatt hours of its electricity from green power sources by 2006. The Department has made limited progress on meeting its commitment. We expected the Department to have met its target by 31 March 2006, as the federal government had clearly identified this target date in its program objective. However, the PERR program has to date achieved only one third of its goal to purchase 450 gigawatt hours of green power. Furthermore, the Department determined that the target date "by 2006" should be interpreted as "by 31 March 2007," the end of the 2006–07 fiscal year—a detail not communicated as part of its 2004 sustainable development strategy. In our view, the Department should be more transparent about its target dates for meeting its sustainable

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Commitment	Progress	Comments
Public Works and Government Services Cana	ida	
Ensure that the PWGSC real property inventory is at least 39 percent more energy and greenhouse gas efficient than it was in 1990. This will require a further 16 percent reduction from 31 March 2002 levels.  (2004 Strategy)  Target: March 2008		Context. Public Works and Government Services Canada (PWGSC) is the government's primary landlord, custodian, and property agent and manages approximately \$6.8 billion worth of real property holdings. This represents 31 million square metres of floor space in a variety of types of buildings across the country. In 2002, building energy use through either electricity consumption or the combustion of fossil fuels represented 81 percent of greenhouse gas emissions from federal government operations. The federal government has committed to ensuring that all new office buildings meet the Canada Green Building
Require that from April 2004, each new or rejuvenated building be at least 35 percent more energy efficient than that which it replaced, and/or at least 25 percent more		Council's Leadership in Energy and Environmental Design (LEED—Canada) Gold level. LEED is a green building rating system and provides a list of standards for environmentally sustainable construction.  What we found. The Department is on track to meet this commitment
energy efficient than the Model National Energy Code for Buildings—1997 (MNECB–1997).  All PWGSC renovation projects (including		for the sample of buildings we reviewed.  Although only one of the four buildings we sampled was complete at th time of this audit, in all cases we found LEED and other green building design and energy performance criteria had been included in building

All PWGSC renovation projects (including the outside envelope and heating, ventilation, and air conditioning) for existing buildings will be a minimum of 15 percent more energy efficient than the MNECB-1997.

Although only one of the four buildings we sampled was complete at the time of this audit, in all cases we found LEED and other green building design and energy performance criteria had been included in building plans. If the design criteria are adhered to during construction, renovation, or rejuvenation, the buildings should meet the improved energy efficiency targets stated in the commitments. However, this audit did not entail any detailed engineering analysis of the efficiency claims made by the Department or their consultants. Because the commitment is still in the early stages of implementation, the actual greenhouse gas reductions and energy efficiency gains have yet to be evaluated by the Department.

We found some inconsistencies in how the Department identifies buildings that should be subject to this commitment. To determine which buildings are available for renovations or rejuvenation, the Department's Real Property National Investment inventory is updated twice a year with input from regional offices. This includes identification of properties that should be subject to the commitment. However, we found that regions were using different criteria to identify projects that should be considered. There is a risk that opportunities for energy efficiency improvements for some buildings may be overlooked.

Regions monitor and report total building energy consumption annually. However, we found there was confusion in the regions on the baseline energy measurements they are expected to report against. This may lead to inaccurate reporting of energy efficiency gains. Regions would benefit from clearer communication and guidance on how to report against this commitment.

Satisfactory Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Oursatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Public Works and Government Services Cana	ida (continu	ed)
Provide services to other federal departments and agencies to help meet the greenhouse gas reduction target of the Federal House in Order initiative.*  (2004 Strategy)  Target: By April 2006, purchase an annual amount of green power of 450 gigawatt hours and sustain it through to March 2008.  * For more information on this commitment, see Chapter 5, Environmental Petitions.		Context. One of the Government of Canada's initiatives to reduce greenhouse gas emissions from its own operations involves purchasing electricity from green power sources for federal facilities across Canada through the Purchase of Electricity from Renewable Resources (PERR) program. The purpose of the initiative is to show federal leadership action on climate change and help develop Canadian markets for green power.  What we found. The Department's 2004 sustainable development strategy commitment also underlines the federal government's commitment to purchase 450 gigawatt hours of its electricity from renewable resources by 2006. The Department measures progress on this commitment in terms of the government's overall progress in meeting its target and has therefore made limited progress in meeting its commitment. At the time of our audit, one third of this target had been met through purchases of 147.4 gigawatt hours of green power. Progress has been slow and no new contracts have been put in place since 2004.

Oursatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exh Int 41 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Transport Canada		
Continue to maintain the environmental emergency plans that are in place for all Transport Canada owned and operated facilities.  (2004 Strategy)  Target: Annual		Context. Transport Canada owns and operates 112 facilities across Canada: 15 airports, 93 ports, and 4 other facilities. These sites often store, or facilitate the transport of, substances that can cause environmental harm in the event of an accidental release or explosion. It is important that environmental emergency plans (EEPs) are in place and staff are trained to respond appropriately. As part of its 2004–2006 Sustainable Development Strategy, Transport Canada made a commitment to implement its Environmental Management System (EMS) on an ongoing basis. The commitment audited here is one of eight EMS objectives.
		What we found. Transport Canada does not have environmental emergency plans in place at all of its owned and operated facilities. Specifically, Transport Canada last reviewed the requirement for EEPs at its facilities in December 2004 and determined that 59 of 112 facilities required the plans. The Department was not able to provide evidence of a clear, documented, and consistently applied set of criteria to support the need for plans at these 59 facilities versus the others. From a request for a sample of 20 EEPs, Transport Canada was able to provide us with 18 plans. Of these 18 plans, only 2 met Transport Canada's target of being updated every 12 months. Overall, we noted a large variation in content and level of detail of the plans.
		Transport Canada would benefit from developing national guidelines and standards that establish environmental emergency planning requirements and ensure consistency across the Department's facilities
Develop a Transport Canada training plan, by 2004–05, and deliver one training session per fiscal year or as deemed required, through to 2006–07.		What we found. Transport Canada has not completed a training plan. A draft outline for a training course was developed in 2004 and included some course objectives. However, due to minimal interest within the Department, a Transport Canada-specific course was never finalized.
(2004 Strategy)		1
Target: December 2004 for training plan. Training delivered as required to 2007.		

Unsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Treasury Board of Canada Secretariat	1	
Administer funds for the Federal Contaminated Sites Accelerated Action Plan (FCSAAP) and monitor compliance with the Treasury Board Contaminated Sites Management Policy among federal departments. (2004 Strategy)	•	Context. In keeping with the government's commitment to identify, assess, and remediate federal contaminated sites, in 2000 and 2002, the Treasury Board approved a collection of policies and best practices for the management of federal contaminated sites—including the Treasury Board Contaminated Sites Management Policy. One of the Treasury Board Secretariat's roles is to monitor departmental compliance with these policies.
Target: Ongoing		In its 2003 Budget, the government committed funding of \$175 million over two years to address the highest-risk federal contaminated sites. This funding commitment, combined with the policies and best practices, enabled the Treasury Board Secretariat, Environment Canada, and custodian departments to develop and implement the Federal Contaminated Sites Accelerated Action Plan (FCSAAP). As a result of this work, many site assessments have been completed and 57 contaminated site projects received funding approval to undertake remediation or care and maintenance activities.
		In its 2004 Budget, the government provided an additional \$3.5 billion over 10 years to continue the ongoing cleanup of federal contaminated sites. This enhanced program has been renamed the Federal Contaminated Sites Action Plan (FCSAP).
		What we found. As part of its responsibilities to oversee financial processes and provide oversight as a budget office, the Treasury Board Secretariat administers the funds for FCSAAP and FCSAP at a global level and monitors compliance with the <i>Treasury Board Contaminated Sites Management Policy</i> .
		With respect to administering the funds, the day-to-day management of FCSAAP and FCSAP is the responsibility of Environment Canada. The Secretariat, however, played a role in ensuring that the entire \$175 million was approved and allocated to deal with contaminated sites, and it continues to review the allocation of the \$3.5 billion. The Secretariat also receives ongoing updates from Environment Canada, participates as an active member of the Contaminated Sites Management Working Group, and acts as co-chair of the Assistant Deputy Ministers Federal Contaminated Sites Steering Committee.

Satisfactory—Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

#### Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Treasury Board of Canada Secretariat (contin	ued)	
		With respect to compliance monitoring, the <i>Treasury Board Contaminated Sites Management Policy</i> required federal entities to develop a one-time Contaminated Sites Management Plan. The Secretariat conducted a review of all the plans to ensure compliance with the policy. In addition, as one of the eligibility requirements under FCSAP, departments requesting funding are required to prepare three-year management plans for contaminated sites, which are to be updated annually. The Secretariat reviews these plans to stay informed on the progress of departmental projects and recommend changes as required.  When reviewing the Secretariat's role, we did not assess the quality of the monitoring completed.
Work with other departments to develop an approach to the climate change agenda that assures accurate reporting on expenditures and results, measurement and reporting frameworks, management systems, and a governance structure.*		Context. Managing issues that cut across departmental mandates is a fundamental problem for governments, and climate change is one of the largest issues of this type for the federal government. The Treasury Board Secretariat froze Budget 2003 funding for climate change, pending the completion of a management and accountability framework for climate change programs.
(2004 Strategy)  Target: March 2004  * Our assessment of this commitment was limited to the Treasury Board of Canada Secretariat's collaboration with other departments in developing a climate change approach. It is not an evaluation of the overall governance and accountability with respect	1	What we found. From June 2003 to June 2005, the Treasury Board Secretariat worked closely with all departments that have climate change programming to develop a management and accountability framework. The Secretariat does not normally play such an active role in horizontal initiatives and expects that the responsibility for managing the framework will be assigned to one or more line departments.  The frozen funding was released to departments (some in March 2004)
to climate change, which is addressed in Chapter 1, Managing the Federal Approach to Climate Change.		and the remainder in June 2005) even though two components of the framework remained outstanding: governance and the implementation of the processes developed for monitoring and reporting on financial and non-financial performance. The Secretariat has indicated that it intends to update the performance management framework in 2006–07.
		Developing the comprehensive management framework for this government-wide initiative was pioneering work. The process has been more complex than foreseen because of the need to collaborate extensively across departments and to develop new approaches and mechanisms. With regard to this commitment, we are satisfied with the Secretariat's collaboration with other departments to date.
		Key observations and recommendations related to the governance and the implementation of the processes developed for the monitoring and reporting of financial and non-financial performance are in Chapter 1, Managing the Federal Approach to Climate Change.

Satisfactory- -Progress is satisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

Exhibit 4.1 Progress made by departments and agencies in meeting commitments from their sustainable development strategies (continued)

Commitment	Progress	Comments
Western Economic Diversification Canada		
Invest in projects that enable western Canadian communities to improve their social, environmental, and economic sustainability. (2004 Strategy)		Context. Western Economic Diversification Canada's (WD) mandate is to promote the development and diversification of Western Canada's economy and advance the interests of the West in national economic policy. Its programs and services support three strategic directions: innovation, entrepreneurship, and sustainable communities.
Target: Increase leveraged money by 10 percent over a three-year period.		The Department invests millions of dollars to promote sustainable development in the West. It invests money through non-profit organizations or partnership projects among governments, the private sector, local residents, and organizations.
		What we found. The Department has exceeded its target for this commitment. Using 2003–04 as a base year, the target was to increase the \$7.5 million of contributions from other partners by 10 percent over three years (to \$8.3 million). The Department met its target in the first year, 2004–05. Preliminary data for the first nine months of 2005–06, as of 31 December 2005, indicates that it will receive \$12.5 million of funding in 2005–06 from other partners.
		The Department has a project approval and tracking system. Through enhancements to the system, it identifies and then tracks projects related to its sustainable development commitments. The Department has recognized that determining whether a project contributes toward sustainable development is problematic. This is addressed in its second target below.
		The Department has also set up a Sustainable Development Strategy Team to provide inter-regional co-ordination of sustainable development-related initiatives.
Target: The number of projects with communities that contribute to social, environmental, and economic sustainability	0	What we found. The Department funded 42 projects with communities in 2004–05 that have contributed to social, environmental, and economic sustainability.
		However, the Department has recognized that easily measured criteria, such as dollars invested and leveraged, do not indicate whether projects have been successful in meeting goals related to environment sustainability.
		The Department plans to use a combination of case studies and project evaluations to better measure progress in meeting this target. It has set April 2007 as the date to complete these initiatives.

Ounsatisfactory—Progress is unsatisfactory, given the significance and complexity of the issue, and the time that has elapsed since the commitment was made.

#### About the Audit

#### **Objectives**

Our objective was to assess the actions of 21 departments and agencies in implementing 39 commitments in their sustainable development strategies.

#### Scope and approach

As part of our annual monitoring of strategy commitments, we audited the following 21 organizations: Agriculture and Agri-Food Canada, the Atlantic Canada Opportunities Agency, Canada Economic Development for Quebec Regions, the Canada Revenue Agency, Canadian Heritage, Correctional Service Canada, Environment Canada, Finance Canada, Fisheries and Oceans Canada, Health Canada, Human Resources and Skills Development Canada, Social Development Canada (the latter two are now called Human Resources and Social Development Canada), Indian and Northern Affairs Canada, Industry Canada, International Trade Canada (now the international trade program of Foreign Affairs and International Trade Canada), National Defence, Natural Resources Canada, Public Works and Government Services Canada, Transport Canada, the Treasury Board of Canada Secretariat, and Western Economic Diversification Canada.

We looked at a total of 39 commitments, which were chosen based on a number of criteria, including significance and timeliness. The results apply only to the 39 commitments and not to each organization's overall performance.

Various audit teams from the Office of the Auditor General conducted the work. For example, the audit team responsible for Transport Canada audited Transport Canada's commitment. We assessed each organization's response to a questionnaire and its key documents and interviewed key officials, if required. The work was conducted to an audit level of assurance.

#### Criteria

To assess the progress made by the departments and agencies, we expected that they were effectively managing the implementation of their commitments and meeting their commitments—that is, they were doing what they said they would.

Based on our assessment, we assigned one of two ratings: satisfactory progress or unsatisfactory progress. In determining the grade, we considered the following elements:

- the requirements of the commitment,
- the complexity of the commitment,
- the amount of time that had elapsed since the commitment was made,
- whether actions had led to demonstrable results, and
- the significant changes in circumstances that had occurred since the commitment was made.

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Our assessment considered the difficulty of the commitment, the time since the commitment was made, and the specific efforts that the department could show had been made to plan, implement, and monitor achievement of the commitment. For example, a department received a satisfactory progress rating if it was behind schedule on a particularly challenging commitment but had made demonstrable progress to meet the commitment. We also took account of changing circumstances such as the reorganization (splitting or merging) of departments that may have occurred since departments had made their commitments.

#### Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

#### **Audit team**

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#### Appendix List of recommendations

The following is a list of recommendations found in Chapter 4. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

#### Recommendation

Environment Canada, in its role of providing leadership and guidance, and co-ordinatiing the development of departmental sustainable development strategies, should work with departments and agencies to identify ways to improve departmental/agency planning, implementation, and monitoring of commitments. Where appropriate, Environment Canada should seek advice and support from the Treasury Board Secretariat on establishing or strengthening appropriate management processes for departments and agencies to support their commitments.

#### Departments' response

Environment Canada's response. Environment Canada will work with departments and agencies to review the current status of departmental planning, implementation, and monitoring systems for sustainable development strategy commitments, identifying strengths, gaps, and challenges. Based on this assessment, Environment Canada will work with the Treasury Board Secretariat, where appropriate, to determine how existing tools and mechanisms can be strengthened or better applied within departments to improve management planning and accountability for strategy commitments.

The Treasury Board Secretariat's response. The Treasury Board Secretariat supports Environment Canada in its role as the department responsible for leading, guiding, and co-ordinating departmental sustainable development strategies. The Treasury Board Secretariat will work with Environment Canada, where appropriate, to advise and support the establishment or strengthening of management processes for departments and agencies to support their commitments.

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(4.20)

# Report of the Commissioner of the Environment and Sustainable Development to the House of Commons—2006

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Chapter 5 Environmental Petitions







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2006



Report of the
Commissioner of the
Environment and
Sustainable Development
to the House of Commons

**Chapter 5**Environmental Petitions



Office of the Auditor General of Canada





Report of the
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to the House of Commons

#### Chapter 5

#### **Environmental Petitions**

- Annual Report on Petitions
- The Government's Purchase of Green Power



Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.



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# Chapter

# 5

## **Environmental Petitions**

- Annual Report on Petitions
- The Government's Purchase of Green Power

The audit work reported in this chapter was conducted in accordance with the legislative mandate, policies. Office of the Auditor General of Canada. These policies and practices embrace the standards recommendate of Chartered Accountants.	s, and practices of the led by the Canadian

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### **Environmental Petitions**

#### **Main Points**

#### What we examined

This is the annual report that the Commissioner of the Environment and Sustainable Development provides to Parliament on the environmental petitions process as required by the *Auditor General Act*. This chapter reports on new petitions received between 1 July 2005 and 30 June 2006.

An environmental petition is a letter to the Auditor General on environmental issues, which the Commissioner of the Environment and Sustainable Development directs to the responsible federal ministers for a response.

In keeping with the focus of the Commissioner's report this year on climate change, this chapter also reports on an audit of the federal government's response to a petition concerning the purchase of green power—power derived from low-impact renewable sources of energy, such as wind. We examined actions taken by Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada to purchase green power and help develop markets for green power.

#### Why it's important

The environmental petitions process, which is administered by the Commissioner on the Auditor General's behalf, is one way Canadians can hold their government to account for its decisions and actions on environmental matters in the context of sustainable development. Among other things, the process allows both citizens and organizations to ask ministers to investigate environmental problems, explain federal policy, and examine the enforcement of environmental legislation. Petitions have resulted in commitments by ministers and action by departments on environmental issues.

Monitoring and auditing petition responses allow us to examine issues brought forward by Canadians that otherwise may not have been drawn to our attention. In our audits of responses, we assess whether federal ministers are meeting their commitments to act on issues raised in the petitions.

The purchase of green power is one of the cornerstones of the federal government's plan to demonstrate leadership in its response to climate change by reducing its own greenhouse gas emissions. In response to a petition in 2002, the government made a commitment to purchase 20 percent of its electricity from green power sources by 2006. The purchase of green power by the federal government can also play an important role in supporting the development of Canada's capacity to produce green power.

#### What we found

- Report on the petitions process. Statements and commitments made by federal ministers in response to petitions have addressed important issues raised by Canadians. Since 2001, climate change and air quality issues have been referenced increasingly in environmental petitions received by the Auditor General of Canada. Our review of the government's responses to these petitions indicates that most addressed the petitioners' questions or explained the government's position on the issues raised. However, some responses failed to address the specific questions asked by petitioners. In our annual report, we observe that the clarity of the questions in petitions has improved and that petitions are generating action.
- Green power purchasing. The federal government has made progress in fostering green power markets in some provinces. However, it has achieved only one third of its objective to purchase 20 percent of its power from green sources by 2006 and has not been contributing as expected to the reduction of greenhouse gas emissions through the Purchase of Electricity from Renewable Resources (PERR) program. Although the PERR program has potential to contribute toward developing green power markets and reducing greenhouse gas emissions, the existing governance of the program remains a key barrier to its success.

The departments and the Treasury Board Secretariat have responded. Environment Canada, Natural Resources Canada, Public Secretariat have agreed with our recommendation. Their responses

#### Introduction

- Since 2001, climate change and air quality issues have become 5.1 increasingly referenced in environmental petitions received by the Auditor General of Canada. These petitions ask questions about federal action and indicate that Canadians are informed and concerned about climate change. In keeping with the focus of the Commissioner's report this year, this chapter highlights petitions and responses on climate change.
- The petitions process is one way that Canadians can hold their 5.2 government to account for its decisions and actions on environmental matters in the context of sustainable development. Any Canadian resident, organization, business, or municipality can submit an environmental petition to the Auditor General of Canada and receive a response from the responsible federal minister(s).

#### Petition 158: Subsidies to the oil and gas industry and federal efforts to address climate change

On 3 October 2005, a number of concerned Canadians held a press conference on Parliament Hill to announce that they had filed an environmental petition (Petition 158) concerning federal tax subsidies to the oil and gas industry. The petitioners allege that these subsidies promote greenhouse gas emissions and undermine government spending and regulations aimed at complying with the Kyoto Protocol and dealing with climate change. The petitioners are concerned that Canada cannot meet its climate change commitments unless tax subsidies to the oil and gas industry are eliminated. The petition claims that tax subsidies to the oil and gas industry totalled \$8 billion for the period 1996-2002 and that this level of spending has exceeded all government spending to date on climate change.

We forwarded this petition to the Minister of Finance, who is responsible for the management of Canada's financial resources, and to the ministers of Natural Resources, Industry, and Environment, who also play a key role in dealing with climate change. Responses to this petition are available on our Web site (www.oag-bvg.gc.ca/ domino/petitions.nsf/english).

Most of the questions in the petition were directed to the Minister of Finance, Our initial analysis of the response, indicated that the Department did not specifically address several of the petitioners' questions. The petitioners also contacted our Office concerned that the response from Finance Canada was inadequate and failed to address questions in their petition. We contacted Finance Canada to request that the Department consider revising its response or indicating why in some cases more direct answers could not be provided. The Department provided a follow-up communication noting the limitations that make it difficult for the Minister to comment on possible future changes in tax policy outside the budget process.

For a detailed description of the climate change issue, please consult The Commissioner's Perspective, which includes a section called Climate Change—An Overview.

For a list of departments and agencies required to respond to environmental petitions, please see our Web site at www.oag-byg.gc.ca/domino cesd\_cedd.nsf/html/sds\_entities\_e.html

**5.3** With the consent of the petitioners, all petitions and responses are posted on our Web site, thereby promoting transparency and creating a public record. Exhibit 5.1 provides more information on the petitions process and the role of the Commissioner of the Environment and Sustainable Development, who oversees the petitions process on behalf of the Auditor General of Canada.

#### Fig. 15 The environmental petitions process and the role of the Commissioner of the Environment and Sustainable Development

The environmental petitions process was established under the *Auditor General Act* in 1995. It provides a way for Canadians to take action on environmental issues that they care about. The federal government is the focus of the petitions process.

The Commissioner of the Environment and Sustainable Development oversees the petitions process on behalf of the Auditor General.

Starting a petition	A Canadian resident submits a written petition to the Auditor General of Canada.		
Reviewing a petition	The Commissioner's team reviews the petition to determine if it meets the requirements of the <i>Auditor General Act</i> .		
	If the petition is accepted, the team will	If the petition cannot be accepted, the petitioner will be informed in writing.	
	<ul> <li>determine the federal departments and agencies responsible for the issues addressed in the petition;</li> </ul>	If the petition is incomplete or unclear, the petitioner will be asked to re-submit it.	
	send it to the responsible ministers; and		
	<ul> <li>send a letter to the petitioner, listing the ministers to whom the petition was sent.</li> </ul>		
Responding to a petition	Once a minister receives a petition, he or she must		
	<ul> <li>within 15 days, send a letter to the petitioner and the Commissioner acknowledging receipt of the petition, and</li> </ul>		
	<ul> <li>within 120 days, consider the petition and send a substantive reply to the petitioner and Commissioner.</li> </ul>		

Ongoing petitions activities			
Monitoring	Reporting	Posting on the Web	Auditing
The Commissioner monitors acknowledgement letters and replies from ministers.	The environmental petitions chapter allows the Commissioner to report to the House of Commons on the number of petitions received, their subject matter and status, and on departmental compliance with statutory timelines.	The Commissioner posts petitions, replies, and summary information on the Web (www.oag-bvg.gc.ca/domino/petitions.nsf/english).	Petition responses are examined as part of audits on environmental and sustainable development issues.

#### Focus of the chapter

5.4 This chapter provides an overview of petitions received that deal with climate change. The chapter also reports to Parliament and Canadians on the use of the petitions process and on our monitoring of petitions received between 1 July 2005 and 30 June 2006. Finally, the chapter reports on an audit of a commitment made by the federal government regarding the purchase of green power in response to Petition 55. More details on the objectives, scope, approach, and criteria are in **About the Chapter**.

#### Varied concerns about climate change

- **5.5** Exhibit 5.2 lists the petitions we have received dealing with climate change. These petitions come from individuals, interest groups, and non-governmental organizations.
- **5.6** The scope and variety of issues covered in these petitions are extensive. For example, petitions have been received from individuals concerned about their personal impact on greenhouse gas emissions, from First Nations concerned about the current impact of climate change on their lifestyle, and from organizations concerned about the government response to the Kyoto Protocol. In addition to raising issues of concern, the petitions pose specific questions for the federal government to answer. The full text of petitions and the responses from ministers are available on our Web site at www.oag-bvg.gc.ca/domino/petitions.nsf/english.
- 5.7 In our review of the responses to the petitions dealing with climate change listed in Exhibit 5.2, we noted that several petition responses from ministers were well-focussed and answered the questions posed or explained the government's position on issues raised by petitioners. For example, the joint response provided to petition 65 (federal funding of hydrogen fuel cell research) and the Environment Canada response to petition 66 (exemption of emissions of car assembly plants from Kyoto Protocol regulations) were complete and informative. However, in our view, a number of the responses failed to fully address the issues raised by petitioners. In some cases, responses provided vague statements of support for environmental causes or summaries of related policy initiatives instead of specific responses to petitioners' questions.

Exhibit 5.2 Petitions concerned with climate change

Petition No.	Petition number and subject	Date submitted
167	Requests information from the federal government on the <i>Alternative Fuels Act</i> regarding the use of alternative fuel technologies in federal vehicles.	
163	Requests that the right to clean water, clean air, and a healthy environment be made explicit in the Canadian Charter of Rights and Freedoms.	
161	Raises concerns about the effects of used motor oil on public health and environmental quality and the effect on economic development if used motor oil is not added to the List of Toxic Substances.	
159	Requests a justification of Canada's ethanol policy as it relates to the environment and energy consumption.	
158	Raises concerns that federal subsidies to the oil and gas sector undermine federal climate change efforts, including the Kyoto Protocol.	October 2005
151	Requests information on, and new regulations to enforce, a federal commitment to require car manufacturers to reduce greenhouse gas emissions.	July 2005
131	Asserts that the federal government has failed to develop an environmental monitoring plan in Nunavut, in violation of the Nunavut Land Claims Agreement.	September 2004
130	Requests a GST rebate on hybrid vehicles, and regulations requiring auto manufacturers to produce a minimum number of low-emission vehicles annually.	
101	Requests clarification on Environment Canada's position on a proposed natural gas power- generating station in the context of both the Kyoto Protocol commitments and Environment Canada's Sustainable Development Strategy.	January 2004
77	Requests explanation on how the promotion of international trade is reconciled with environmental considerations, given the greenhouse gas emissions associated with trade and transport.	May 2003
74	Raises concerns about the continued ecological integrity of the Great Lakes, given the effects of climate change paired with various human activities.	April 2003
69	Requests a federal environmental assessment to study the effects of a proposed wind energy complex on bird species and critical wetlands.	February 2003
66	Requests information on the exemption of the auto manufacturing sector from emission regulations under the Kyoto Protocol.	January 2003
65	Suggests that the federal government promote sustainable development by increasing funding for research on hydrogen fuel cell vehicles.	January 2003
63	Urges the government to ratify the Kyoto Protocol.	January 2003
58	Suggests that the federal government remove federal subsidies for fossil fuels and nuclear energy to strengthen the renewable energy sector; requests information on federal initiatives to develop and promote renewable energy.	October 2002
55	Alleges that the federal government's failure to adequately regulate air quality constitutes a violation of basic human rights, including the rights to life, health, and security of the person; suggests numerous regulatory measures to address identified gaps.	
52	Requests information on the use of funds earmarked for the engagement of First Nations in the development of federal climate change strategies.	May 2002
40	Requests information on steps to take, on a personal level, to reduce greenhouse gas emissions and requests information on potential changes to the tax system, and other federal actions, to support specific sustainable technologies.	
29	Suggests that federal government departments offer yearly transit passes through payroll deduction, to increase transit ridership in the National Capital Region.	June 2001

#### Petition issues addressed in this report

- 5.8 Some of the petitions noted in Exhibit 5.2 address issues that are covered in our report this year:
  - Petition 63—Ratification of the Kyoto Protocol. In response to this petition, the ministers of Environment and Natural Resources stated that "reports will be made public every two years, outlining the Climate Change Plan for Canada's successes and its evolution as it is adjusted to meet new challenges and opportunities." During the audit of managing the federal approach to climate change, the Chapter 1 audit team found that the first of these promised reports was prepared by the Climate Change Secretariat and issued in June 2003. The Secretariat was disbanded in 2004, and no other comprehensive report on climate change efforts has been issued. The commitment to report on the success of climate change initiatives every two years has not been met.
  - Petition 52—Engagement of First Nations in developing climate change strategies; Petition 131—Progress on an environmental monitoring plan in Nunavut. These two petitions have links with issues covered in Chapter 2, Adapting to the Impacts of Climate Change.
  - Petition 159—The government's policy on ethanol. This petition relates to the audit of the Ethanol Expansion Program, reported in Chapter 3, Reducing Greenhouse Gases Emitted During Energy Production and Consumption.
  - Petition 55—Purchase of green power. Our findings of an audit of a 2002 commitment made to purchase green power in response to Petition 55 are reported later in this chapter (Chapter 5).
  - In addition, we audited three commitments on the purchase of green power, from the sustainable development strategies of Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada, and our findings are reported in Chapter 4, Sustainable Development Strategies.

### Annual report on petitions received (1 July 2005 to 30 June 2006)

The 1995 amendments to the Auditor General Act require the Commissioner to monitor petition responses from ministers and to report annually to the House of Commons on the number of petitions received, their subject matter, and their status. This annual report also makes a number of observations on the operation of the petitions process in order to highlight good practices and opportunities for improvement.

#### Petitions addressed wide-ranging issues

- We received 32 petitions this year—a slight decrease from last year. The majority of these petitions came from Ontario, Quebec, and British Columbia (Exhibit 5.3). We noted that although most petitions continue to come from individuals and local or regional coalitions, national organizations also use the petitions process.
- **5.11** We noted an increase in well-organized, clear petitions this year. Most petitioners supplied background information where this was necessary to understand the context of the petition; in addition, they clearly set out their questions and addressed the petitions to specific ministers. We found that, in general, the clearer the information and questions in the petition, the more specific the response provided.
- 5.12 The petitions submitted this year covered a wide variety of topics, including the following:
  - Protection of species and their habitat. Petitions 157A and 157B concern the recovery program for the endangered swift fox; Petition 155 concerns the protection of threatened species of turtles and their habitat in Hamilton Harbour; Petitions 154A and 154B concern the ecological impact of motorized vehicles in the Columbia Wetlands Wildlife Management Area; and Petitions 153A and 153B concern the proposed port expansion at Roberts Bank in British Columbia and federal accountability for conservation and protection of fish, wildlife, and endangered species and their habitat.
  - Federal management of northern transboundary waterways. Petitions 95B and 164 raise concerns about the federal environmental assessment undertaken for the Tulsequah Chief mine and road project in northern British Columbia and the

Exhibit 5.3 Petitions come from many parts of the country (1 July 2005 to 30 June 2006)



Petition No.	Subject	
95B	Follow-up petition on acid drainage and re-opening of a metal mine in northern British Columbia	
109C	Follow-up petition on a closed landfill in Cramahe, Ontario	
122C	Follow-up petition on a housing development near Mission, British Columbia	
140B	Follow-up petition on cleanup of the Sydney Tar Ponds and Coke Ovens	
140C	Follow-up petition on cleanup of the Sydney Tar Ponds and Coke Ovens	
148B	Follow-up petition concerning the protection of wild salmon from disease at fish farms	
151	Regulation to reduce greenhouse gas emissions from motor vehicles	
152	Full access to information used for decisions on genetically modified organisms	
153A	Port development on Roberts Bank in the Fraser River Estuary, British Columbia	
153B	Follow-up petition on the port development on Roberts Bank in the Fraser River Estuary, British Columbia	
154A	Motorized vessels regulation in the Columbia Wetlands, British Columbia	
154B	Follow-up petition on a motorized vessels regulation in the Columbia Wetlands, British Columbia	
155	Environmental assessment process for the Hamilton Harbour and Fisherman's Pier development project	
156	Sanitary landfill site development proposal in Simcoe County, Ontario	
157A	Status of the swift fox population in Canada	
157B	Follow-up petition on the swift fox population in Canada	

Petition No.	Subject
NU.	
158	Subsidies to the oil and gas industry and federal efforts to address climate change
159	Canada's policy on ethanol
160	The impacts of sea lice from aquaculture on wild fish
161	Adding used motor oil to the List of Toxic Substances under the Canadian Environmental Protection Act, 1999
162	Gas plant contaminants, Turner Valley, Alberta
163	Right to clean air, clean water, and a healthy environment
164	Transboundary watersheds affected by northern British Columbia metal mine
165	Sewage runoff in a northern community
166	Canada's commitment and support for the North American Agreement on Environmental Cooperation
167	Implementation and potential improvement of the Alternative Fuels Act
168	Development of the Eagleridge Bluffs in British Columbia
169	Sustainable development plan for the Nitinat First Nations People of British Columbia
170	Canadian mining company operations abroad
	Federal review of new substances under the Canadian Environmental Protection Act, 1999
172	Species diversity and resource development in Alberta
	Federal oversight of the nuclear industry in Canada

- potential risk to fish and wildlife and their habitat. The petitioners allege continuing pollution problems, such as acid mine drainage and water pollution, from the site.
- Access to information. Petition 152 asks the government to adopt legislation that would give the public better access to information used for decision making, including environmental assessment studies on genetically modified organisms.
- Canadians' right to a healthy environment. Petition 163 alleges that the right of Canadians to clean water, clean air, and a healthy environment is being violated. The petitioner asks the federal government to confirm this right and to make it explicit in the Canadian Charter of Rights and Freedoms, as has been done in other countries.
- Listing of used motor oil as a toxic substance. In petition 161, the petitioner asks why used motor oil has not been added to the Canadian Environmental Protection Act, 1999, Schedule 1, List of Toxic Substances. The ministers of Health and Environment indicated their intention to recommend the addition of used motor oil to this list in 2003. The petitioner questions the government's decision-making process and is concerned about how, in the absence of a national standard, current practices for managing and disposing of used motor oil may affect public health and environmental quality.

#### Most departments responded on time

5.13 This year, most departments responded within the mandatory 120-day timeline (Exhibit 5.4). However, of the eighteen departments responding to petitions this year, seven were late in responding to at least one petition. We noted an increase in requests for extensions, particularly from Environment Canada and the Parks Canada Agency. The Auditor General Act permits extensions to the deadline when it is not possible to reply within 120 days. Petition responses are not considered late if ministers advise petitioners that they require an extension in advance of the due date. However, in a recent case, a department notified the petitioner that it required an extension to the due date for the response but that the response would be provided as soon as possible. The response was subsequently provided 103 days after the original due date. Therefore, where extensions are necessary, we advise departments to specify, where possible, the additional time required to respond, as a courtesy to the petitioner.

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Exhibit 5.4 Most departments and agencies responded on time (responses due between 1 July 2005 and 30 June 2006\*)

Department/Agency	Number of petitions	Percentage on time	Extension requested
Agriculture and Agri-Food Canada	3	100%	0
Canada Border Services Agency	1	100%	1
Environment Canada	26	92%	5
Finance Canada, Department of	2	100%	1
Fisheries and Oceans Canada	13	85%	1
Foreign Affairs Canada	3	67%	0
Health Canada	9	89%	1
Human Resources and Social Development Canada	2	100%	0
Indian and Northern Affairs Canada	5	60%	0
Industry Canada	4	100%	1
Justice Canada, Department of	2	100%	0
National Defence	1	0%	0
Natural Resources Canada	4	100%	1
Parks Canada Agency	6	100%	3
Public Safety and Emergency Preparedness Canada	1	100%	0
Public Works and Government Services Canada	3	100%	0
Transport Canada	10	90%	0
Treasury Board of Canada Secretariat	2	100%	0

<sup>\*</sup> Note: Petitions are not considered "late" if extensions to the 120-day timeline are requested prior to the due date of the petition.

**5.14** An overview of petitions activity during our reporting period (1 July 2005 to 30 June 2006) is provided in Appendix A. It includes summaries of all new petitions received since 1 July 2005. Please visit our Web site to see all of the updates, and click on the link to the Petitions Catalogue to view the summaries and the full text of petitions and responses.

#### Petitions are generating action

5.15 Ontario Mid-Canada Radar sites—progress being made. In 2004, the Mushkegowuk Council representing seven northern Ontario First Nations communities submitted a petition (132) asking the federal government to acknowledge its responsibility to participate in the remediation of the Ontario Mid-Canada Radar sites. The Council alleges that the sites were abandoned by the Department of

National Defence in the 1960s and are currently discharging contaminants. In its response, the Department noted that although these lands are now the responsibility of the Province of Ontario, as a good environmental steward, National Defence remains open to discussing the cleanup of these sites with the Province. The petitioner remains hopeful that an agreement to remediate many of these sites will eventually be reached.

- 5.16 Sydney Tar Ponds—environmental review continues. A resident of Cape Breton submitted a petition (140) in April 2005 requesting a joint review panel in the environmental assessment of the remediation plan for the Sydney Tar Ponds. The petitioner has concerns about health impacts of the remediation proposals and asked that the most stringent Canadian cleanup standards apply to the remediation project. The Minister of the Environment responded in August 2005, noting that he had indeed determined that a joint review panel is the most appropriate level of assessment for the proposed remediation project. Correspondence from the petitioner indicated she was pleased to be an active participant in the joint review panel and has since submitted a follow-up petition (140B) on the cleanup standards that will apply to the project.
- Shipping containers—preventive measures taken. In our 2005 Environmental Petitions chapter, petitions 126A and 126B regarding fumigants in shipping containers were highlighted. While working as a shipper and receiver, the petitioner claimed that he opened a pallet and was covered with Dinex—a pesticide no longer in use in Canada. At the time of publication of our report last year, only one of four departments responsible for replying had responded—Human Resources and Skills Development Canada. Since then, we have received the responses from Health Canada, the Canada Border Services Agency, and Transport Canada.
- Before the Transport Canada response was issued, the Chief of Enforcement of the Transport Dangerous Goods Directorate met with the petitioner and several of the parties involved in the incident to discuss the concerns raised in the petitions and review some of the information. In addition, the Canada Border Services Agency investigated the petitioner's complaint but was unable to determine why the shipment in question contained Dinex. The Agency informed the petitioner that it has since taken measures to identify and examine shipments of this nature more closely and release only properly treated shipments. Border staff were also alerted to the possible presence of loose pesticides in similar shipments. The response notes that these

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petitions raised awareness that pesticides may be improperly used to treat packages arriving from certain areas of the world.

**5.19** Environmental charge—audit of invoices conducted. In petition 139, received in March 2005, the petitioner alleges that a laundry service company was using chemicals that had harmful effects on the environment and that the company had been billing federal departments for an "environmental charge" not provided for in its contracts. This petition was sent to Agriculture and Agri-Food Canada, Environment Canada, Public Works and Government Services Canada, and the Treasury Board Secretariat. Upon receipt of the responses to the petition, the petitioner subsequently sent additional letters to each minister requesting further investigation into this matter.

5.20 The laundry service company maintains that the allegations regarding the use of harmful chemicals are false. The Canadian Food Inspection Agency, which reports to Parliament through the Minister of Agriculture and Agri-Food, conducted an internal audit of the invoices that it received from this company to confirm the eligibility of payments made. The audit found that the "environmental charge" on several of the invoices was legitimate; however, certain invoices associated with a specific contract did include ineligible environmental charges. The internal audit determined that no ineligible charges were paid by the Agency. The Canada Food Inspection Agency has indicated that a summary of the internal audit that occurred as a result of the petition will be available on its Web site.

5.21 Ski plans in national parks—working with the petitioner. In September 2005, Environment Canada and the Parks Canada Agency provided a joint response to petition 143. The petitioner posed a series of questions about long-range ski plans in national parks. After the petitioner received the response, he contacted our Office and the Parks Canada Agency to express his concerns about the response. Officials from the Agency spoke with the petitioner and modified some sections of their response. Instead of the petitioner submitting a follow-up petition and waiting 120 days for another response, the Agency addressed several of the petitioner's concerns. The petitioner was pleased with the comprehensive nature of the Agency's overall response, although some concerns remain. The revised response can be found in our Petitions Catalogue on our Web site.

**5.22** Comprehensive responses—detailed information offered. This year we received a number of comprehensive responses to petitions. Two examples are provided in the following two paragraphs.



Photo: Courtesy of Reno Sommerhalder, Associate, Under The Sleeping Buffalo (UTSB)

- 5.23 In November 2005, nine departments provided an informative and substantive joint response to petition 152. The petitioner questioned why Canada had not adopted legislation similar to the United Nations Aarhus Convention, which would allow for a citizen's right to fully access environmental assessments concerning genetically modified organisms. The departments responded by providing clear information about the process currently in place for Canadian citizens through the Access to Information Act. Throughout the response, the departments provided Web links and references and explained the exceptions contained in the Act, allowing for quick verification and further guidance. In addition, the Canadian Food Inspection Agency posted this response on its Web site.
- 5.24 Environment Canada also provided a comprehensive response to petition 155 concerning the protection of threatened species of turtles and their habitat in Hamilton Harbour. This response provides detailed information on the application of the Species at Risk Act and clarifies the federal role in environmental assessments where a species at risk is affected. In particular, the response provides helpful information on how to request an investigation under the Species at Risk Act.

#### Some opportunities for improvement in responses and petitions exist

- Departments need to be explicit in their responses about questions they cannot address. The petitions we received this year contained a wide variety of questions and were therefore often sent to more than one department for response. Where departments choose not to respond jointly, we urge them to be explicit about questions being addressed and questions that could not be addressed. For example, if a specific question does not fall within the mandate or jurisdiction of the responding department, this should be stated. Explaining clearly why specific questions cannot be addressed in the response can help avoid follow-up petitions and further requests for clarification.
- 5.26 Our review of petition responses indicates that most responses to petitions provide complete answers to the questions raised. However, as discussed in paragraph 5.7, some responses fail to address the questions raised by the petitioner or instead respond with vague statements of support for environmental causes. These responses often result in follow-up petitions and/or petitioners who question the transparency and accountability of the government. We review petition responses to ensure that all of the questions posed by petitioners have been addressed. Occasionally, our Office receives

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correspondence from petitioners who are dissatisfied with the response they received from the minister(s). If petitioners wish to submit this type of correspondence, we encourage them to send it to both the responsible minister and the Commissioner of the Environment and Sustainable Development in a timely manner.

- Web site offers information on the petitions process and guidance on how to submit a petition. An environmental petitions template is now available, explanations and facts about the process are provided, and an on-line listing of petitions and responses is also accessible on our Web site. In the on-line Petitions Catalogue, potential petitioners can search by issue to determine if a similar petition has already been submitted. An existing response to an older petition may answer their questions or clarify the federal role, thereby eliminating the need for a petition or helping the petitioner to pose different questions about the same environmental matter.
- **5.28** We have continued to encourage petitioners, to the best of their ability, to ensure that the facts provided in their petitions are correct. Allegations without appropriate supporting documentation or references make it difficult for departments to determine if the petitioners' concerns are based on fact. Also, petitioners are discouraged from including material that they are aware has confidentiality concerns.
- **5.29** The petitions process has evolved considerably since its creation in 1995. Since that time, a variety of sectors, including universities and environmental organizations, have used the environmental petitions process. Petitions are being referenced by parliamentarians and senators and by other provincial and international organizations, such as the Commission for Environmental Cooperation and the Environmental Commissioner for Ontario.
- 5.30 It has been 10 years since the first petition was submitted in October 1996. Next year, the Commissioner plans to include in her annual report to Parliament a retrospective on petitions. It will look at the evolution of the process over the last 10 years and observe whether government action in response to petitions has resulted in improvement to the environment and sustainable development in Canada. We want to continue to encourage Canadians to voice their concerns through the petitions process—to foster change and make a difference now and for the future.

# The government's purchase of green power—an audit of a petition response

#### **Background**

#### Green power is important in dealing with climate change

#### Green power

Electricity generated by green power has two key characteristics:

- It is produced from renewable energy sources such as wind, sun, small scale hydroelectric plants, wood waste biomass, and landfill gas.
- Its production has low adverse environmental impacts
- 5.31 Electricity generation is one of the largest sources of atmospheric emissions in Canada. Conventional electricity generation from fossil fuels produces atmospheric emissions, such as nitrogen oxides, sulphur dioxide, and particulate matter. These emissions are associated with a variety of health effects and environmental impacts. According to Canada's 2004 greenhouse gas inventory, about 17 percent of total greenhouse gas emissions were from electricity generation. The use of green power replaces electricity generated by fossil fuels, thereby reducing greenhouse gas emissions.
- 5.32 At the 2004 International Conference for Renewable Energies, representatives from 154 countries, including Canada, reaffirmed their commitment to substantially and urgently increase the share of renewable energy in the total energy supply. They underlined the need for regulatory and policy frameworks that support the development of markets for renewable energy, recognizing that renewable energies can significantly contribute to mitigating greenhouse gas emissions, reducing harmful air pollutants, and creating new economic opportunities.
- 5.33 The federal government established a formal green power purchasing program. One of the tools that the federal government has used as part of its climate change strategy is to purchase electricity produced from renewable energy sources to power its own facilities through its Purchase of Electricity from Renewable Resources (PERR) program. By paying a premium for renewable energy, and entering into longer-term agreements with power producers, the federal government seeks to increase the demand for green power. This in turn leads to the building of more facilities that generate green power and an increase in the availability of green power to other potential customers.
- 5.34 The objective of the PERR program is to purchase electricity from emerging renewable sources in order to reduce greenhouse gas emissions associated with federal operations, and to help develop and expand the market for green power in Canada. All green power that the federal government purchases through the PERR program must be certified through an independent organization.

#### Certification of green power

Green power for the PERR program is certified through Environment Canada's Environmental Choice Program. This certification program ensures that the federal government is purchasing electricity that is

- derived from renewable resources with low adverse environmental impacts, and
- generated from new facilities and/or refurbished facilities (that first began generating new or incremental electricity on or after 1 April 2001)



The PERR program purchases green power from the Castle River Wind Farm in Alberta.

Photo: Courtesy of Vision Quest, TransAlta's Wind Business

Federal House in Order initiative (FHIO)—The Government of Canada's plan for reducing greenhouse gas emissions from its own operations. The initiative helps to show Canadians that the federal government is demonstrating leadership in reducing its own greenhouse gas emissions that affect climate change. The government is working to reduce its emissions by 31 percent (about 1,200 kilotonnes) from 1990 levels by 2010. The initiative reported that, from 1990 to 2002, it achieved a total reduction of 24 percent by reducing energy use and switching to energy sources that were producing less greenhouse gas in the government's buildings and fleets. The PERR program is expected to contribute almost half of the remaining 7 percent of emission reductions required to meet the FHIO target.

#### Did you know?

The amount of electricity that a federal office building housing 2,500 employees consumes per year: about 13.5 gigawatt hours. This is enough electricity to power close to 1,350 average Canadian homes annually.

- 5.35 Pilot agreements were a first step in purchasing green power. Between 1997 and 2001, Environment Canada and Natural Resources Canada established pilot agreements to purchase green power over a 10-year period in Alberta, Prince Edward Island, and Saskatchewan.
- 5.36 In 2001, the federal government established an interdepartmental management committee to implement the PERR program. The management committee has representatives from Natural Resources Canada (NRCan), Environment Canada, and Public Works and Government Services Canada (PWGSC), and it operates by consensus decision making. NRCan provides technical advice on renewable energy policy and market development capabilities. Environment Canada provides program analysis, particularly in the areas of green power certification and the calculation of credits for reductions in greenhouse gas emissions. PWGSC is responsible for preparing requests for proposals and negotiating contracts.
- 5.37 The PERR program is one of the cornerstones of the federal government's plans to reduce its own greenhouse gas emissions and lead the action on climate change. The Federal House in Order initiative (FHIO) expects the program and the pilot projects in Saskatchewan and Prince Edward Island to contribute 45 percent of its remaining emissions reduction target. However, funding for the PERR program runs out prior to the 2010 FHIO target date, and the government recognizes that the program will need to be extended to contribute to the FHIO target as expected at that time.
- The federal government has made commitments to purchase green power. In its Government of Canada Action Plan 2000 on Climate Change, the federal government made a commitment to purchase 20 percent of its electricity (calculated at about 450 gigawatt hours or 450 million kilowatt hours per year) from green power sources by 2006 and to foster the development of green power markets. It repeated this commitment in its 2002 Climate Change Plan for Canada, and again in its response to an environmental petition submitted to our Office in 2002 by Greenpeace Canada and the Toronto Environmental Alliance (petition 55). Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada have made related commitments in their sustainable development strategies. In August 2005, the PERR management committee extended the timeline for achieving the target from 2006 to 2008. We audited the extent to which the federal government has met its commitments to purchase green power and to develop green power markets.

#### Developing green power is a challenge when the energy sector is changing rapidly

5.39 As provinces deregulate their energy markets, the stakeholders are changing and the rules for purchasing power are shifting. Provincial governments are also now supporting green power. In general, green power is still more expensive to produce than power from coal or natural gas. However, the costs of conventional energy are rising and the costs of generating green power are generally falling, making green power economically feasible where conditions are suitable. The PERR management committee indicates that a lack of green power capacity in particular provinces has also been a constraint in developing new markets. The rapidly changing markets, stakeholders, and prices have created genuine challenges for the PERR program.

# Observations and recommendations

# The federal government has fostered the development of green power in provinces where agreements were initiated

5.40 The federal government has purchased green power over the past decade. Agreements are in place in Alberta, Prince Edward Island, and Saskatchewan to purchase a total of 57.4 gigawatt hours of green power annually. A 2004 agreement in Ontario contracts for an additional 90 gigawatt hours a year. All of the agreements support the development of green power markets in these provinces. For example, the federal government was the first major customer for green power in Alberta, where about 2.7 percent of electricity is now generated from certified green sources. Provincial officials and green power producers credit the federal government with being a catalyst for this activity.

# The Government of Alberta is purchasing over 90 percent of its electricity for its own use from green power sources

In 2003, the Government of Alberta committed to increasing its purchase of green power to 90 percent of its total electricity consumption beginning 1 anuary 2005. According to provincial officials, in 2005 the Government of Alberta cons imed 215 gigawatt hours of certified green power from wind and biomass sources through contracts with ENMAX Energy Corporation and Canadian Hydro Developers Inc. The ENMAX contract is for 10 years, and the contract with Canadian Hydro Developers Inc. is for 20 years

Alberta government officials estimate that this commitment to purchase green power will result in the reduction of about 215 kilotonnes of greenhouse gases annually

# The federal government has not met its targets for purchasing green power and is not contributing as expected to the reduction in greenhouse gas emissions

- 5.41 A total of \$75 million has been allocated to the PERR program and related pilot projects since 1997. According to information provided by departments, only \$11 million had been spent as of March 2005, with an additional estimated \$19 million committed in signed agreements. There are still no agreements in place to purchase green power in British Columbia, New Brunswick, Newfoundland, and Nova Scotia, although the program was intended to offset current high-emission electricity, such as electricity from coal generation, in these provinces.
- 5.42 At the time of our audit, the federal government had reached about one third of its goal to purchase 20 percent of its electricity from green power sources. Agreements are in place to purchase 147.4 gigawatt hours per year of the 450 gigawatt hours per year it

committed to purchase by 2006 (Exhibit 5.5). We noted that in setting the target for purchasing green power at 450 gigawatt hours per year (in Action Plan 2000), the government used a figure that did not include electricity used in buildings it was leasing. According to information provided by Natural Resources Canada, at that time leased buildings accounted for about one fifth of federal electricity use. Therefore, the government did not base its target of 450 gigawatt hours per year on the total amount of electricity it uses, but only on the electricity it purchases for the buildings it owns.

Exhibit 5.5 Purchase commitments toward the target for the Purchase of Electricity from Renewable Resources (PERR) program

Year	Chronology
1997	Alberta pilot agreement with Environment Canada signed and supply starts (2 GWh/yr)
1998	Alberta pilot agreement with Natural Resources Canada signed and supply starts (10 GWh/yr)
2000	Saskatchewan pilot agreement with Natural Resources Canada signed
2001	PEI pilot agreement with Natural Resources Canada signed and supply starts (13 GWh/yr)  PERR Management Committee established
2002	Saskatchewan supply starts (32.4 GWh/yr)
2003	Ontario Request for Proposal issued
2004	Ontario agreement signed and supply starts (maximum of 90 GWh/yr)
2006	Original target date to purchase 450 GWh of electricity annually from green power sources
2008	Revised target date to purchase 450 GWh of electricity annually from green power sources
2009	Program funding expires
2010	Target date to contribute 235 kilotonnes of greenhouse gas emission reductions under Federal  House in Order initiative



- 5.43 Although one of the objectives of the PERR program is to reduce greenhouse gas emissions from federal operations by 235 kilotonnes, program managers could not direct us to a current or consistent measurement of greenhouse gases reduced through the program. The most recent information available from the Federal House in Order initiative (2003–04) indicates that the PERR program has contributed only 25 of the targeted annual 235 kilotonnes of emission reductions. We found that PERR program managers use more specific methods of calculating the reduction in emissions and report that the program has achieved 46 kilotonnes of emission reductions based on the same contracts. Even using the most optimistic estimate provided, it is clear that the PERR program is not contributing as expected to the reduction in greenhouse gas emissions from federal operations.
- 5.44 In its 2005 climate change plan (Project Green), the federal government committed to significantly greater reductions from its own operations (1,000 kilotonnes annually), separate from the existing FHIO target of about 1,200 kilotonnes. Natural Resources Canada officials told us that that as a result, the success of the green power purchasing program is increasingly critical in achieving the expected reduction in emissions.

# Program governance has led to missed opportunities for action and delays in achieving results

- 5.45 We recognize that external factors, such as changing provincial electricity markets, changing energy prices, and the federal spending restrictions in place following to the climate change review announced in Budget 2005, have created some challenges for the PERR program. However, it is our view that the existing governance of the program remains a key barrier to its success. Progress has slowed since the interdepartmental management committee was put in place in 2001, few results have been achieved, and required program evaluations have not been done.
- 5.46 Given that three departments with different mandates are equally responsible for management of the program, it is important that clear terms of reference are in place for the management committee. Terms of reference would clarify mechanisms for decision making and therefore enable the management committee to function effectively in the fast-changing environment in which it must operate. We found that there were no terms of reference in place and decisions were being made by consensus. In our opinion, the lack of clear guidance for a management structure involving three departments

with different mandates and expertise has contributed to the management committee's slow pace in achieving results.

- 5.47 Following the establishment of pilot agreements, the PERR program's resources and targets were identified in 2001 without taking into account that the PERR management committee, and the supporting PWGSC contracting authority, had a considerable amount to learn about green power purchasing. The management committee has taken a long time to proceed with green power purchases. There have been periods in which the committee did not meet for over a year—periods in which key decisions needed to be made. For example, one of the program objectives is to purchase new green power from emerging sources, but the committee is still defining what this means in practice.
- **5.48** A critical factor in energy suppliers' willingness to enter into agreements is the length of term of the agreements. We found that, at the price premiums offered by the federal government, energy suppliers look for multi-year agreements, sometimes covering at least 10 years, in order to finance the development of new facilities. However, at the outset of the program, funds were allocated for only five years—to March 2006, although funds were later rolled forward to March 2009. For many years, the committee discussed its inability to secure long-term contracts. In addition, the federal government entered into agreements with provincially and privately owned utilities, indicating an intent to purchase green power over a 10-year period. However, only in the fall of 2005 did the management committee make a business case to the Treasury Board Secretariat to significantly extend the funding to secure long-term contracts. This business case was not approved at this time as the Treasury Board required additional information.
- 5.49 The PERR management committee indicates that the spending restrictions in place on climate change programs (as a result of Budget 2005) are responsible for the loss of green power purchase opportunities that would have brought the total green power purchased closer to the target. We found that while these spending restrictions may have had an impact on a recent opportunity to purchase power in Alberta, the PERR program has had funding in place since 2001 and has been unable to deliver the expected results during that time.
- **5.50** While the management committee has tracked the purchase of green power in gigawatt hours, it seldom gives a clear picture of the progress the program is making. It did not formally evaluate the lessons



Energy Ottawa Green Power Generation Station, Victoria Island; Ottawa supplies power to the PERR program.

learned in the pilot agreements, nor did it evaluate the program itself, as required. In addition, it has not formally assessed the program's impact on the development of the green power market against the specific targets it identified at the outset of the program.

# The government has not developed a vision for the future of green power purchasing and market development

- initiative intended to reduce the greenhouse gas emissions from the government's own operations by 31 percent by 2010—to show federal leadership in addressing climate change to other sectors of the economy and to the Canadian public. However, the federal government's existing approach for purchasing green power extends only to 2008–09, when the funding expires. Therefore, the continued contribution of the PERR program to reducing greenhouse gas emissions from federal government operations remains unclear. Furthermore, current spending restrictions resulting from the climate change review create uncertainty around the opportunities to enter into long-term contracts. Other potential means for developing future strategies for purchasing green power include the new federal Policy on Green Procurement and a national renewable energy strategy, currently under discussion by federal and provincial energy ministers.
- **5.52** Some provinces are currently ahead of the federal government in developing plans for green power production and purchasing. This also points to a need for the federal government to reassess its objectives and priorities to foster green power markets where none had existed before.
- 5.53 In summary, the federal purchase of green power is an important part of the government's plan to reduce greenhouse gas emissions from federal operations. The federal pilot projects for purchasing green power had some successful initial results fostering the development of green power in Canada. However, when the PERR program was initiated and the management committee was established in 2001, progress slowed, due in large part to an ineffective management structure. The program has not met its targets for amounts of green power purchased or for the expected reduction of greenhouse gas emissions. Nor has it met its full potential to accelerate the development of green power capacity across Canada. In light of the current energy environment, it will be important for managing departments to consider how the program would contribute to a vision for renewable energy in Canada.

- 5.54 Recommendation. Natural Resources Canada, Environment Canada, and Public Works and Government Services Canada, in consultation with the Treasury Board Secretariat, should establish an appropriate management structure (for example, identification of a lead department) to manage the Purchase of Electricity from Renewable Resources program. The appropriate management structure should
  - review program objectives and priorities for the purchase of green power within the context of broader initiatives such as the Green Procurement Policy, the national renewable energy strategy currently under discussion, and the Federal House in Order commitment to reduce greenhouse gas emissions in federal operations;
  - set appropriate targets and timelines;
  - secure funding for an appropriate period of time to enable suppliers to finance the development of new green power facilities; and
  - report on progress annually to Parliament and to the public.

Departments' response. Natural Resources Canada, Environment Canada, and Public Works and Government Service Canada agree that an appropriate management structure reflecting the Commissioner's recommendations should be developed for any future program involving the purchase of renewable electricity by the Government of Canada.

The Treasury Board Secretariat's response. The Treasury Board Secretariat supports the establishment of an appropriate governance structure for the management of the Purchase of Electricity from Renewable Resources program and will respond to proposals from Natural Resources Canada, Environment Canada, and Public Works and Government Services Canada to establish such a structure. The Treasury Board Secretariat will respond in a timely manner to proposals received from the three departments.

#### Conclusion

5.55 The environmental petitions process is one way Canadians can hold their government to account for its decisions and actions on environmental matters in the context of sustainable development. Currently, the Auditor General receives numerous environmental inquiries throughout the year, many of which result in the submission

of a petition. Our monitoring of petition responses indicates that the clarity of questions posed in petitions has improved and a number of petitions have resulted in the responsible departments taking action to address the issues.

5.56 Auditing petition responses allows us to examine issues brought forward by Canadians that may not otherwise have come to our attention. Our audit of the federal purchase of green power found that the Purchase of Electricity from Renewable Resources program had some successful results during its pilot phase in supporting the development of green power in Canada. However, the federal government has achieved only one third of its objective to purchase 20 percent of its power from green sources by 2006 and it is not contributing as expected to the reduction of greenhouse gas emissions. Although the PERR program has potential to contribute to the development of green power markets and to the reduction in greenhouse gas emissions, the existing governance of the program remains a key barrier to its success. The federal government has yet to consider if and how the program would contribute to a vision for renewable energy in Canada.

### **About the Chapter**

#### **Objectives**

The objective of this chapter is to inform Parliament and Canadians on the use of the petitions process and our monitoring of commitments and statements made in response to petitions.

Each year since 2003, as part of our monitoring function, the petitions chapter has reported on audits of statements or commitments made by departments and agencies in response to petitions. We audit selected petition responses in order to determine if ministers and departments were doing what they said they would do in response to petitioners.

The objective of our petition response audit this year was to determine the extent to which the federal government has met its commitments to purchase, by 2006, 20 percent of its electricity from low-impact renewable power sources, and to develop green power markets to reduce greenhouse gas emissions.

#### Scope and approach

To determine which petition response to audit, we identified petitions received that dealt with climate change and greenhouse gas emissions up to June 2005. We reviewed all the responses and identified statements and commitments made by ministers and then ranked them according to a number of criteria, including materiality/significance of the issue, sensitivity of the issue, risk, federal mandate, availability of evidence and objectivity of information about the issue and the commitment made, auditability, and timeliness. Based on this analysis, the commitment selected for audit is from a joint government response to petition 55 in 2002, which states:

The Government of Canada has committed to purchase, by 2006, 20 percent (or approximately 450 gigawatt-hours) of its electricity consumption as qualifying low-impact renewable power having an acceptable certification such as under the Environmental Choice Program. Developing green power markets will reduce a broad range of emissions commonly found in association with electricity generation using fossil fuels.

The entities audited include Environment Canada, Natural Resources Canada, and Public Works and Government Services Canada, which together manage and monitor the Purchase of Electricity from Renewable Resources (PERR) program. We conducted interviews and field work to determine the extent to which the commitments were being met. We collected data and evidence of implementation of the commitments, along with appropriate documentation. In addition, we examined three sustainable development strategy commitments related to our audit objective, and the results of this work are presented in Chapter 4, Sustainable Development Strategies.

#### Criteria

Our audit was based on the following criteria:

We expected the program to have achieved intended results.

We expected federal government departments to have fair and reliable information on the results achieved by the programs for which they are responsible.

#### Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

#### Audit team

Principal: John Affleck Director: Kimberley Leach

Christine Allen Amélie Bernard Jacquelyn Davy Sébastien Defoy Roberta Hawkins Josée Petitclerc Carolyn Pharand

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### Appendix A Petitions activity (1 July 2005 to 30 June 2006)

This appendix includes all petitions (follow-up and new issues) received during the activity period noted above. To access the full text of petitions and replies from December 1995 to 30 June 2006, go to the Petitions Catalogue on our Web site (www.oag-bvg.gc.ca/domino/petitions.nsf/english). If necessary, paper copies of the catalogue can be obtained on request.

### Petition No. 95B: Follow-up petition on acid drainage and re-opening of a metal mine in northern British Columbia

Date submitted: 19 July 2005

Petitioner(s): Society for Atlin's Sustainable Economic Initiatives

**Summary:** This follow-up petition raises new concerns regarding wildlife impacts and unresolved questions about the environmental assessment process for the Tulsequah Chief Mine and Road Project in northern British Columbia. The petitioner points to alleged economic shortcomings of the project and the environmental effects that could arise if the access road is built. The petitioner also poses questions about how the federal government is responding to *Fisheries Act* violations, and how its decisions reflect its commitment to sustainable development. An explanation of decisions made and actions taken during the current environmental assessment is requested, and the petitioner calls for a full panel review of the project under the *Canadian Environmental Assessment Act*.

**Issues:** Aboriginal affairs, biological diversity, environmental assessment, fisheries, human health/environmental health, and water

Federal departments/agencies replying: Environment Canada, Fisheries and Oceans Canada, Indian and Northern Affairs Canada, and Transport Canada

Status: Completed

#### Petition No. 109C: Follow-up petition on a closed landfile in Cramatic Untaria

Date submitted: 6 March 2006
Petitioner(s): Bruce G. Melnichuk

**Summary:** This follow-up petition claims that a closed landfill in Cramahe, Ontario, is discharging contaminants into nearby Cold Creek in contravention of the *Fisheries Act*. The creek feeds into the Trent River, which is a tributary to Lake Ontario. The petitioner alleges that the township misrepresented the size and location of the landfill, and he would like to see action taken under the *Canadian Environmental Protection Act*. 1999.

Issues: Biological diversity, compliance and enforcement, human health/environmental health, toxic substances, waste management, and water

Federal departments/agencies replying: Environment Canada

Status: Reply (replies) received but not yet posted

### Petition No. 122C: Follow-up petition on a housing development near Mission, British Columbia

Date submitted: 28 February 2006

Petitioner(s): Tracy Lyster

Summary: This follow-up petition concerns a housing development project near Mission, B.C., and potential ecological impacts to Silvermere Lake, the Stave River system, and the wildlife and salmon-spawning habitat in this area. The petition calls for a statutory review or environmental assessment under the Canadian Environmental Assessment Act and the protection of several species living in the area under the Species at Risk Act.

Issues: Biological diversity, compliance and enforcement, and fisheries

Federal departments/agencies replying: Environment Canada, Fisheries and Oceans Canada, and Transport Canada

Status: Reply (replies) received but not yet posted

### Partion No. 1408. Follow-up patition on cleanup of the Sydney Tar Ponds and Coke Ovens

Date submitted: 22 March 2006

Petitioner(s): Mary Ruth MacLellan and James Argo

Summary: This follow-up petition raises concerns about toxic substances released from the Sydney Tar Ponds and Coke Ovens site and seeks additional information on the joint review panel currently being carried out under the Canadian Environmental Assessment Act. In particular, the petitioners ask questions about the cleanup standards, the criteria to be applied during remediation, and the health effects of dioxin and furan released from the site.

Issues: Air quality, environmental assessment, human health/environmental health, toxic substances, and waste management

Federal departments/agencies replying: Environment Canada and Health Canada

Status: Reply (replies) received but not yet posted

### Petition No. 140C; Follow-up petition on cleanup of the Sydney Tar Ponds and Coke Ovens

Date submitted: 7 June 2006

Petitioner(s): Mary Ruth MacLellan and James Argo

Summary: This follow up petition is concerned that the joint federal/provincial agency responsible for the cleanup project of the Sydney Tar Ponds and Coke Ovens site has signed binding contracts before the environmental impact assessment work of the joint review panel is complete. The petitioners allege that the agency has committed to procuring a technology that has yet to be approved or opposed by the panel. The petitioners believe that this technology may cause adverse human health effects.

Issues: Compliance and enforcement, environmental assessment, governance, human health/environmental health, and toxic substances

Federal departments/agencies replying: Environment Canada and Public Works and Government Service Canada

Status: Reply (replies) pending

#### Petition No. 148B: Follow-up petition on the protection of wild salmon from disease at fish farms

Date submitted: 3 April 2006

Petitioner(s): Sierra Legal Defence Fund

**Summary:** This follow-up petition raises concerns that farmed fish may transfer bacterial and viral diseases to wild indigenous fish stocks, threatening their health. The petitioner is concerned that the federal government is not adequately responding to the risk of disease transfer through research, monitoring, surveillance, enforcement, and reporting. Many of the questions follow up on questions posed in the original petition and on the replies provided by federal departments.

Issues: Biological diversity, fisheries, and other

Federal departments/agencies replying: Fisheries and Oceans Canada

Status: Reply (replies) received but not yet posted

#### Petition No. 151: Regulation to reduce greenhouse gas emissions from motor vehicles

Date submitted: 8 July 2005

Petitioner(s): Sierra Club of Canada

**Summary:** The petitioner asks the federal government to clarify and reaffirm its commitment to its agreement with car manufacturers on targets to reduce greenhouse gas emissions. The petitioner also requests that the government start developing a regulation under the *Canadian Environmental Protection Act*, 1999 to ensure that reductions in greenhouse gas emissions from motor vehicles are achieved by the 2010 target date.

Issues: Air quality, climate change, and transport

Federal departments/agencies replying: Environment Canada, Natural Resources Canada, and Transport

Canada

Status: Completed

#### Petition No. 152: Full access to information used for decisions on genetically modified organisms

Date submitted: 8 July 2005
Petitioner(s): Greenpeace

**Summary:** The petitioner calls for Canada to ratify and implement the Cartagena Protocol on Biosafety and ban the release of genetically modified organisms to avoid contamination outside and inside Canada. The petitioner also asks the government to adopt legislation that would give the public better access to information used for decision making, including environmental assessment studies on genetically modified organisms.

**Issues:** Agriculture, biological diversity, environmental assessment, human health/environmental health, international co-operation, and science and technology

Federal departments/agencies replying: Agriculture and Agri-Food Canada, Environment Canada, Fisheries and Oceans Canada, Foreign Affairs and International Trade Canada, Health Canada, Industry Canada, Department of Justice Canada, Natural Resources Canada, and Treasury Board of Canada Secretariat

### Petition No. 15.1A: Port development on Roberts Bank in the Fraser River Estuary, British Columbia

Date submitted: 12 July 2005

Petitioner(s): Boundary Bay Conservation Committee

Summary: This petition arises from concerns that federal departments are not carrying out their legislative responsibilities for the conservation and protection of fish and wildlife and their habitats, and their fiduciary responsibility to First Nations for the proposed port expansion at Roberts Bank. The petitioner calls for a moratorium on any further port development on Roberts Bank until a comprehensive environmental assessment is completed. The petitioner also suggests that the government consider establishing a marine protected area for the Fraser River Estuary.

**Issues:** Aboriginal affairs, biological diversity, environmental assessment, fisheries, human health/environmental health, and transport

Federal departments/agencies replying: Environment Canada, Fisheries and Oceans Canada, Indian and Northern Affairs Canada, Parks Canada Agency, and Transport Canada

Status: Completed

# Pottillon No. 1538) Following publish on the port development on Roberts Bank in the Fraser River Estuary, British Columbia

Date submitted: 22 August 2005

Petitioner(s): Boundary Bay Conservation Committee

Summary: In this follow-up petition, the petitioner is concerned about a proposal by Environment Canada to develop a management plan for Roberts Bank. The petitioner claims the development of the management plan is premature as scientific studies and an assessment of cumulative effects have not yet been carried out.

Issues: Biological diversity, environmental assessment, fisheries, human health/environmental health, and transport

Federal departments/agencies replying: Environment Canada and Fisheries and Oceans Canada

Status: Completed

### Petition No. 154A: Moronzen vessels regulation in the Columbia Wetlands, British Columbia

Date submitted: 26 July 2005

Petitioner(s): Wildsight

Summary: The petitioner is concerned about the risk of negative and irreversible impacts on the ecological integrity of critical wildlife habitat if the government does not establish a regulation to restrict high-horsepower motorized vessels operating in the Columbia Wetlands Wildlife Management Area. The petitioner asks Transport Canada and Environment Canada when the boating regulation will be enacted, given a provincial court of appeal decision preventing the Government of British Columbia from applying horsepower restrictions.

Issues: Biological diversity, human health/environmental health, transport, and water Federal departments/agencies replying: Environment Canada and Transport Canada

# Petition No. 154B: Follow-up petition on a motorized vessels regulation in the Columbia Wetlands, British Columbia

Date submitted: 29 May 2006

Petitioner(s): A Canadian resident

**Summary:** This follow-up petition raises concerns that motorized vessels in the Columbia National Wildlife Area of British Columbia are having an impact on the ecological integrity of the protected area. The petitioner alleges that the federal government has yet to act on the application submitted in 2002 under the *Canadian Shipping Act* to restrict motorized vessels from operating in navigable waters. The petitioner asks Transport Canada and Environment Canada when a boating regulation will be enacted, and exactly who is responsible for producing and relaying information between the departments and the public.

Issues: Biological diversity, human health/environmental health, transport, and water Federal departments/agencies replying: Environment Canada and Transport Canada

Status: Reply (replies) pending

# Petition No. 155: Environmental assessment process for the Hamilton Harbour and Fisherman's Pier development project

Date submitted: 19 August 2005

Petitioner(s): Wilamina McGrimmond

**Summary:** The petitioner asks the government to ensure that the guidelines and proper procedures, as specified in the *Species at Risk Act*, are followed for the Hamilton Harbour and Fisherman's Pier development project. The petitioner suggests that recovery strategies, action plans, and management plans must be developed to encourage the recovery of several species of turtles.

Issues: Aboriginal affairs, biological diversity, compliance and enforcement, and environmental assessment

Federal departments/agencies replying: Environment Canada

Status: Completed

#### Petition No. 156: Sanitary landfill site development proposal in Suncoo County, Untario

Date submitted: 22 August 2005 Petitioner(s): Stephen R. Ogden

**Summary:** The petitioner raises concerns about potential contamination from the discharge of treated landfill leachate into the MacDonald Creek in Simcoe County. The petitioner requests that a study be completed by Fisheries and Oceans Canada to evaluate the possible negative impacts of such a facility prior to the approval of the landfill site.

Issues: Environmental assessment, waste management, and water

Federal departments/agencies replying: Fisheries and Oceans Canada

#### Petition No. 157A. Status of the swift fox population in Canada

Date submitted: 6 September 2005 Petitioner(s): G. Gabriella Carrelli

Summary: The petitioner questions the government's methodology for its survey on the live trapping of the swift fox population, alleging that the survey is costly and detrimental to species recovery. The petitioner suggests the government fund a private captive breeding program.

**Issues:** Biological diversity

Federal departments/agencies replying: Environment Canada and Parks Canada Agency

Status: Completed

### Petition No. 1578 Follow-up petition on the swift fox population in Canada

Date submitted: 6 September 2005 Petitioner(s): G. Gabriella Carrelli

Summary: In this follow-up to petition 157A, the petitioner asks the government to explain its vision for protecting the Canadian swift fox population. The petitioner suggests that the government fund a private captive breeding colony until the results of the 2005-06 survey have been completed and recorded.

**Issues:** Biological diversity

Federal departments/agencies replying: Environment Canada, Indian and Northern Affairs Canada, and Parks Canada Agency

Status: Completed

### Petition No. 158. Subsidies to the oil and gas industry and federal efforts to address climate change

Date submitted: 4 October 2005

Petitioner(s): Charles Caccia, Friends of the Earth Canada, Pembina Institute for Appropriate Development, and Sierra Legal Defence Fund (represented by the Sierra Legal Defence Fund)

Summary: The petitioners allege that federal tax subsidies to the oil and gas industry indirectly promote greenhouse gas emissions and undermine federal efforts to address climate change. The petitioners are concerned that Canada cannot meet its climate change commitments unless tax subsidies to the oil and gas industry are eliminated.

Issues: Climate change and international co-operation

Federal departments/agencies replying: Environment Canada, Department of Finance Canada, Industry Canada, and Natural Resources Canada

Status: Reply (replies) received but not yet posted

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#### Petition No. 159: Canada's policy on ethanol

Date submitted: 11 October 2005

Petitioner(s): Mouvement Au Courant

Summary: The petitioner asks for the justification of the Canadian government's policy on ethanol, as it relates to the environment and energy consumption, including figures. The petitioner also requests a detailed lifecycle analysis of the anticipated reductions in greenhouse gas emissions stemming from the production and use of ethanol. The petitioner asks Natural Resources Canada to explain certain analyses and statements published on the Department's Web site.

Issues: Climate change

Federal departments/agencies replying: Agriculture and Agri-Food Canada, Environment Canada, Industry Canada, Natural Resources Canada, and Transport Canada

Status: Completed

#### Petition No. 160: The impacts of sea lice from aquaculture on wild fish

Date submitted: 21 October 2005

Petitioner(s): Watershed Watch Salmon Society

Summary: The petitioner questions the sources of sea lice infecting wild fish and their relative importance—questions previously asked in a letter to Fisheries and Oceans Canada. The petitioner asks the Department how it will manage risks of sea lice from aquaculture, what progress it is making with area management strategies, and whether it believes these strategies will be effective.

Issues: Biological diversity and fisheries

Federal departments/agencies replying: Fisheries and Oceans Canada

Status: Completed

# Petition No. 161: Adding used motor oil to the List of Toxic Substances under the Canadian Environmental Protection Act, 1999

Date submitted: 16 November 2005

Petitioner(s): Lavery, De Billy

**Summary:** The petitioner states that although in 2003 the ministers of Environment and Health said they would recommend adding used motor oil to the List of Toxic Substances under the *Canadian Environmental Protection Act*, 1999, it has still not been added. The petitioner disagrees with the current management of used motor oil and questions the government's decision-making process. The petitioner also questions the effects of used motor oil on public health and environmental quality (especially on climate change), and the effect on economic development if used motor oil is not added to the List of Toxic Substances.

Issues: Air quality, climate change, human health/environmental health, and international co-operation Federal departments/agencies replying: Environment Canada, Health Canada, and Industry Canada

#### Polition No. 162-Gas plant contaminants, furner Valley, Alberta

Date submitted: 13 January 2006

Petitioner(s): Linda Abrams

Summary: The petitioner is concerned about health and environmental impacts resulting from soil and water contamination by the Turner Valley Gas Plant—a national historic site. The petitioner poses questions about the designation of the site and the enforcement of federal regulations to deal with the contamination. Requests for federal action concerning the site itself, related health impacts in Alberta, and a comprehensive water act for Canada are included as part of the petition.

Issues: Environmental assessment, human health/environmental health, toxic substances, waste management, and water

Federal departments/agencies replying: Canadian Heritage, Environment Canada, Fisheries and Oceans Canada, Health Canada, and Parks Canada Agency

Status: Reply (replies) received but not yet posted

#### Petition No. 163: Right to clean air clean water, and a healthy environment

Date submitted: 6 February 2006 Petitioner(s): David R. Boyd

Summary: According to the petitioner, the right of Canadians to clean water, clean air, and a healthy environment is being violated, due to widespread environmental pollution. The petitioner asks the government to confirm this right and to make it explicit in the Canadian Charter of Rights and Freedoms. The petitioner also asks the government to explain why it is not participating fully in certain international conventions on access to information, public participation, and human rights, and why it has not recognized the human right to water in international forums.

Issues: Air quality, human health/environmental health, international co-operation, and water

Federal departments/agencies replying: Environment Canada, Foreign Affairs and International Trade Canada, Health Canada, and Department of Justice Canada

Status: Reply (replies) received but not yet posted

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#### Petition No. 164: Transboundary watersheds affected by northern British Columbia metal mine

Date submitted: 14 February 2006

Petitioner(s): Transboundary Watershed Alliance

**Summary:** The petitioner is concerned about damage to the ecosystems and wildlife populations of the region spanning northern British Columbia and southeastern Alaska as a result of the Tulsequah Chief mine and road project. The petition includes questions on the environmental assessment of the project conducted under the Canadian Environmental Assessment Act, on the road decommissioning and on the referral to the International Joint Commission. In addition, the petitioner poses general questions concerning federal processes, such as protection of wildlife populations under the Species at Risk Act, and communication and co-operation between federal authorities and Aboriginal communities.

**Issues:** Aboriginal affairs, biological diversity, environmental assessment, international co-operation, natural resources, and transport

Federal departments/agencies replying: Environment Canada, Fisheries and Oceans Canada, Foreign Affairs and International Trade Canada, Indian and Northern Affairs Canada, and Transport Canada

Status: Reply (replies) received but not yet posted

#### Petition No. 165: Sewage runoff in a northern community

Date submitted: 15 February 2006 Petitioner(s): A Canadian resident

**Summary:** The petitioner is concerned about alleged health and environmental impacts resulting from sewage runoff from a mining operation. The petitioner requests an analysis of possible soil and water contamination and also asks for explanations of federal authorities' actions to date. (The full petition and responses will not be published, at the petitioner's request.)

**Issues:** Environmental assessment, human health/environmental health, toxic substances, and waste management

Federal departments/agencies replying: Environment Canada, Health Canada, and Indian and Northern Affairs Canada

# Polition No. 186: Canada's commitment and support for the North American Agreement on Environmental Cooperation

Date submitted: 4 April 2006

Petitioner(s): Sierra Legal Defence Fund

Summary: This petition raises concerns and seeks information on the alleged inconsistency between the goals, objectives, and commitments Canada assumed when it signed the North American Agreement for Environmental Cooperation and its conduct since that time. The petitioner requests federal ministers to respond to questions on Canada's environmental obligations and goals under this agreement and on Canada's administration of the Commission for Environmental Cooperation. The petitioner also requests additional information on the relationship between the Commission for Environmental Cooperation and the Security and Prosperity Partnership.

Issues: Compliance and enforcement, environmental assessment, governance, and international co-operation

Federal departments/agencies replying: Environment Canada, Foreign Affairs and International Trade Canada, Department of Justice Canada, and Transport Canada

Status: Reply (replies) received but not yet posted

### Phillion No. 137. Implamentation and potential improvement of the Alternative Fuels Act

Date submitted: 18 May 2006 Petitioner(s): David R. Boyd

Summary: This petition addresses the Alternative Fuels Act, created in 1995 to reduce the emission of greenhouse gases and other air pollutants from vehicles used by federal departments and agencies. The petitioner questions the ability of the federal government to reach the reduction targets that have been set. The petitioner recommends an amendment to the Act to include new technology, such as gas-electric hybrids and fuel cell vehicles.

Issues: Air quality, climate change, human health/environmental health, and transport

Federal departments/agencies replying: Environment Canada, Natural Resources Canada, Public Works and Government Services Canada, Transport Canada, and Treasury Board of Canada Secretariat

Status: Reply (replies) pending

## Petition No. 168: Development of the Eagleridge Bluffs in British Columbia

Date submitted: 28 June 2006 Petitioner(s): Douglas M. Brown

Summary: This petition concerns the protection of Eagleridge Bluffs, a wetland ecosystem above Horseshoe Bay in West Vancouver. The petitioner opposes a proposed highway that will cut through the bluffs to accommodate increased traffic for the 2010 Winter Olympic Games. The petitioner notes the sensitivity of the ecosystem and proposes an alternative solution—a tunnel under the bluffs. The petitioner would like named federal departments to explain what can be done to address the environmental impacts of the project and to explain the enforcement of treaties and laws such as the Canadian Environmental Assessment Act, the Indian Act, and the Migratory Birds Act.

Issues: Aboriginal affairs, biological diversity, governance, and transport

Federal departments/agencies replying: Canadian Heritage, Environment Canada, Fisheries and Oceans Canada, Indian and Northern Affairs Canada, Department of Justice Canada, Natural Resources Canada, Public Safety and Emergency Preparedness Canada, and Transport Canada

Status: Reply (replies) pending

## Petition No. 169, Sustainable development plan for the Nitions First National people of Bottsh Columbia.

Date submitted: 19 June 2006
Petitioner(s): A Canadian resident

**Summary:** This petition raises concerns about development under way on lands claimed by the Nitinat First Nations people in British Columbia. The petitioner alleges that the management of the territory is unsustainable and that development is taking place in an area that may have an impact on the environment from which the Nitinat people draw their livelihood. The petitioner asks for clarification regarding the types of development taking place on the territory, and inquires into the enforcement of and compliance with federal and international laws in the region.

Issues: Aboriginal affairs, governance, human health/environmental health, and natural resources

Federal departments/agencies replying: Environment Canada, Indian and Northern Affairs Canada, Department of Justice Canada, Natural Resources Canada, and Public Safety and Emergency Preparedness Canada

Status: Reply (replies) pending

## Petition No. 170: Canadian mining company operations abroad

Date submitted: 14 June 2006

Petitioner(s): A Canadian organization

Summary: This petition seeks details of the financial, diplomatic, and policy support that the federal government offers to Canadian mining companies operating abroad. The petitioner asks that the federal government provide information on its position on enforcement of Canadian ratified codes, conventions, and laws that pertain to the activities of Canadian companies mining abroad, sustainable development, and environmental protection.

Issues: International co-operation and natural resources

Federal departments/agencies replying: Canadian International Development Agency, Department of Finance Canada, Foreign Affairs and International Trade Canada, Industry Canada, Department of Justice Canada, and Natural Resources Canada

Status: Reply (replies) pending

## Petition No. 171: Federal review of new substances under the Canadian Environmental Protection Act, 1999

Date submitted: 23 June 2006

Petitioner(s): A Canadian resident

Summary: This petition concerns the review and regulation of a new substance under the New Substances Notification Regulations in the *Canadian Environmental Protection Act*, 1999. The petitioner questions the process that Environment Canada and Health Canada have followed during the review of the file. The petitioner is concerned that the controls imposed by both departments on the manufacturing process, especially the restrictions on the release of the substance, are not warranted and might threaten the economic viability of the company.

Issues: Science and technology, and toxic substances

Federal departments/agencies replying: Agriculture and Agri-Food Canada, Atlantic Canada Opportunities Agency, Environment Canada, Health Canada, and Industry Canada

Status: Reply (replies) pending

## Petition No. 172: Species diversity and resource development in Alberta

Date submitted: 15 June 2006

Petitioner(s): James Argo

**Summary:** The petition concerns alleged impacts of the oil and gas industry on species diversity and human health in the Little Bow River watershed and the Red Deer River area in Alberta. The petition focusses on the environmental and human health impact of wells and flaring from this industry. Residents of the area are concerned about impacts on birds and fish and their habitat. Some of the species in this area are identified under the *Species at Risk Act* and the Committee on the Status of Endangered Wildlife in Canada.

Issues: Biological diversity, fisheries, human health/environmental health, and natural resources

Federal departments/agencies replying: Agriculture and Agri-Food Canada, Canada Border Services Agency, Environment Canada, Fisheries and Oceans Canada, Health Canada, Industry Canada, Department of Justice Canada, Human Resources and Social Development Canada, and Natural Resources Canada

Status: Reply (replies) pending

## Petition No. 173: Federal oversight of the nuclear industry in Canada

Date submitted: 16 June 2006

Petitioner(s): A Canadian resident

**Summary:** This petition poses policy and process questions related to the Canadian Nuclear Safety Commission, regarding the federal regulation and oversight of the nuclear industry in Canada. The petition focusses on life-extension of nuclear reactors as well as the management of long-lived, non-fuel radioactive wastes in Canada. The petitioner seeks answers to issues associated with current legislation, regulations, and policies related to nuclear power.

Issues: Environmental assessment, human health/environmental health, and natural resources

Federal departments/agencies replying: Environment Canada, Health Canada, and Natural Resources Canada

Status: Reply (replies) pending

## **Appendix B** List of recommendations

The following is a list of recommendations found in Chapter 5. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

#### Recommendation

### Departments' response

The government's purchase of green power—an audit of a petition response

Resources Canada, Environment
Canada, and Public Works and
Government Services Canada, in
consultation with the Treasury Board
Secretariat, should establish an
appropriate management structure (for
example, identification of a lead
department) to manage the Purchase of
Electricity from Renewable Resources
program. The appropriate management
structure should

- review program objectives and priorities for the purchase of green power within the context of broader initiatives such as the Green Procurement Policy, the national renewable energy strategy currently under discussion, and the Federal House in Order commitment to reduce greenhouse gas emissions in federal operations;
- set appropriate targets and timelines;
- secure funding for an appropriate period of time to enable suppliers to finance the development of new green power facilities; and
- report on progress annually to Parliament and to the public. (5.31-5.53)

Departments' response. Natural Resources Canada, Environment Canada, and Public Works and Government Service Canada agree that an appropriate management structure reflecting the Commissioner's recommendations should be developed for any future program involving the purchase of renewable electricity by the Government of Canada.

The Treasury Board Secretariat's response. The Treasury Board Secretariat supports the establishment of an appropriate governance structure for the management of the Purchase of Electricity from Renewable Resources program and will respond to proposals from Natural Resources Canada, Environment Canada, and Public Works and Government Services Canada to establish such a structure. The Treasury Board Secretariat will respond in a timely manner to proposals received from the three departments.

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